PLEORA TECHNOLOGIES INC.

iPORT SB-Pro IP Engine

For Sony® FCB-EH6300 Block Cameras

User Guide

Pleora Technologies

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Chapter 1

About this Guide

This chapter describes the purpose and scope of this guide and provides a list of complimentary guides.

The following topics are covered in this chapter:

- "What this Guide Provides" on page 2
- "Related Documents" on page 2

What this Guide Provides

This guide provides you with the information you need to connect the Sony® FCB-EH6300 block camera and iPORT SB-Pro IP engine, and to start using them as a single device. In this guide you can find a product overview, instructions for connecting the block camera and IP engine cables, installing the Pleora eBUS™ SDK, establishing an Ethernet connection, and performing general configuration tasks.

The last chapter of this guide provides Technical Support contact information for Pleora Technologies.

Related Documents

The *iPORT SB-Pro IP Engine User Guide* is complemented by the following guides:

- *GEVPlayer Quick Start Guide*
- *GEVPlayer User Guide*
- *vDisplay HDI-Pro IP Engine User Guide*

In addition to the guides listed above, you can consult the *Sony Color Camera Module Technical Manual* that corresponds to your camera, available from Sony.

Chapter 2

About the iPORT SB-Pro IP Engine

This chapter describes the IP engine, including the product variants and key features.

The following topics are covered in this chapter:

- "The iPORT SB-Pro IP Engine" on page 4
- "Model Variants" on page 5
- "Feature Set" on page 6
- "Selected GenICam Features" on page 7
- "Key Sony Block Camera Features" on page 8

The iPORT SB-Pro IP Engine

The iPORT SB-Pro IP engine transforms Sony FCB-EH6300 block cameras into GigE Vision® compliant cameras. Compact and simple to integrate, iPORT SB-Pro IP engines transmit high-definition video with low, predictable latency. Complete with feature control using the GenICam™ standard, these products are ideal for systems integrators looking to differentiate their offerings, increase interoperability, and introduce networking capabilities.

The iPORT SB-Pro IP engine is built with connectors for power, general purpose inputs and outputs (GPIO), and serial communication. The connectors allow the IP engine to supply power to the block camera, send and receive commands, such as zoom and focus, and control external accessories, such as motorized wipers and pan/tilt housings.

The iPORT SB-Pro is compatible with the Pleora Technologies vDisplay HDI-Pro IP engine and the eBUS SDK. The iPORT SB-Pro IP engine enables the block camera to become part of a complete networked video connectivity solution.

Video Transmission

The iPORT SB-Pro IP engine captures video from the Sony FCB-EH6300 block camera as per the BT.709 standard.

The iPORT SB-Pro IP engine can transmit video at up to 30 frames per second with low, consistent latency, and is available as compact, low-power OEM board sets designed for use in a variety of housings.

GenICam Interface

Sony VISCA™ commands for key features of the Sony FCB-EH6300 block camera, such as zoom, mute, and freeze, are mapped to the GenICam interface, allowing integrators to implement features using a common application programming interface (API). This integration greatly simplifies software development tasks, and is helpful when using the IP engine with third-party, off-the-shelf software packages.

Model Variants

The iPORT SB-Pro IP engine is supplied in these variants and is equipped with these parts, as listed in the following table.

Table 1: Model Variants

iPORT SB-Pro IP engine package variants*	
iPORT SB-Pro EH Series OEM Board Set	**Quantity**
iPORT SB-Pro EH Series Board Set	1

iPORT SB-Pro EH Series OEM Board Kit	**Quantity**
iPORT SB-Pro EH Series Board Set	1
12-pin circular connector for power, GPIO, and serial communication	1
Adapter board for 12-pin circular to 20-pin FFC connector	1
20-pin FFC cable	1
30-pin coax cable	1

iPORT SB-Pro EH Series Evaluation Kit	**Quantity**
iPORT SB-Pro EH Series Board Set, mounted on chassis	1
12-pin circular connector for power, GPIO, and serial communication, soldered on to the adapter board	1
20-pin FFC cable	1
30-pin coax cable	1
Power supply	1
Gigabit Ethernet network interface card (NIC)	1
Ethernet cable	1
Mounting screws for block camera	4
Pleora eBUS SDK CD (includes GEVPlayer sample application)	1

*Before assembly, ensure that all components are included in the selected package.

Feature Set

The iPORT SB-Pro IP engine provides the features and functions listed in the following table.

Table 2: iPORT SB-Pro IP Engine Feature Summary

Key features
Support for Sony FCB-EH6300 block cameras
RS-232 bidirectional serial connection
Software-controlled GPIO: • 4 TTL (5V) general purpose inputs • 3 TTL (5V) general purpose outputs
GenICam integration of key camera controls
Compatible with Automated Imaging Association (AIA) GigE Vision specification 1.2; operates with GigE Vision and GenICam compatible applications
Environmental and Physical
Storage temperature: -40° to 85°C
Operating temperature: 0° to 40°C (higher if using thermal pads between FPGA/PHY/DDR and camera chassis)
Key camera interface features
Focus/auto-focus
White balance
Gain
Backlight compensation
Shutter and exposure
Gamma
Resolution
Frame rate
Zoom
Title display
Grid
Event reporting

Selected GenICam Features

In addition to the mandatory GenICam features for any compliant GigE Vision device, the iPORT SB-Pro IP engine provides a number of additional features. Selected GenICam features are listed in the following table.

To view the description of a setting in GEVPlayer, click the feature. A brief description appears at the bottom of GEVPlayer.

Table 3: Selected GenICam Features

Feature	Description
SonyBlockVideoModeCurrent*; SonyBlockVideoModeNext*	Defines the camera's video mode. This feature controls the video signal register of the camera head through the Sony VISCA protocol. The following video modes are available: • 1080i @ 60Hz • 1080i @ 59.94Hz • 1080i @ 50Hz • 1080p @ 30Hz • 1080p @ 29.97Hz • 1080p @ 25Hz • 720p @ 60Hz • 720p @ 59.94Hz • 720p @ 50Hz • 720p @ 30Hz • 720p @ 29.97Hz • 720p @ 25Hz
Width	Width of the image.
Height	Height of the image.
OffsetX	Horizontal image offset.
OffsetY	Vertical image offset.
PixelFormat	Available pixel formats are: • Mono 8 • YUV422Packed • YUV411Packed Not all pixel formats are available for all video modes.
DeviceReset	Resets the IP engine and block camera to their power up states.

* The **Current** feature shows how the device is currently configured, while the **Next** feature indicates how the feature will be configured after you execute the **DeviceReset** command or after the next power cycle.

Key Sony Block Camera Features

These key Sony block camera features are incorporated into the iPORT SB-Pro IP engine and are available in the IP engine's GenICam XML file. More information about these commands can be found in the *Sony Color Camera Module Technical Manual* that corresponds to your camera, available from Sony.

Pleora Technologies has tested and verified compatibility with release 0x0200 of the Sony block camera firmware. Other Sony block camera firmware releases may be compatible; however they have not yet been tested.

Table 4: Key Sony Block Camera Features

Feature name	Attributes	Sony VISCA feature commands	Description
Mute	False; True	CAM_MuteModeInq; CAM_Mute (On; Off)	Blanks the block camera's video output.
Freeze	False; True	CAM_FreezeModeInq; CAM_Freeze (On; Off)	Freezes the current image.
PictureEffect	Off; NegReversal; BlackAndWhite	CAM_PictureEffect-ModeInq; CAM_PictureEffect (Off; Neg.Art; BW)	Enables the block camera to perform positive/ negative reversal of acquired images, or output the images in monochrome.
EdgeEnhancement	0-15	CAM_ApertureInq; CAM_Aperture Direct	Provides up to 16 levels of edge enhancement to images. Default is no enhancement.
Grid	Off; XYAxis; Full	CAM_PrivacyZone (Grid Off, CenterLineOn, GridOn)	Controls the grid displayed on the screen.
InfraredCutFilter	False; True	CAM_ICRModeInq; CAM_ICR (On; Off)	Controls the block camera's auto ICR function. Automatically switches the settings for enabling or disabling the infrared cut filter.
InfraredCutFilterAuto	False; True	CAM_AutoICR_ModeInq; CAM_AutoICR (On; Off)	Determines the low light threshold to enable/ disable of the infrared cut filter in Auto ICR mode.
InfraredCutFilterDarknessLevel	0-28	CAM_AutoICRThresh-oldInq; CAM_AutoICR Threshold	Controls the block camera's Infrared Cut Filter function.

Table 4: Key Sony Block Camera Features (Continued)

Feature name	Attributes	Sony VISCA feature commands	Description
MultiLineTitleBlinking	False; True	CAM_MultilineTitle Title Set1	Controls whether the selected line blinks.
MultiLineTitleClear	Command	CAM_MultilineTitle Title Clear	Resets the settings of the selected line or lines.
MultiLineTitleDisplay	False; True	CAM_MultilineTitle (On, Off)	Activates the display of the selected line or lines.
MultiLineTitleFontColor	White; Yellow; Violet; Red; Cyan; Green; Blue	CAM_MultilineTitle Title Set1	Controls the font color of the selected line or lines.
MultiLineTitleOffsetX	0-31	CAM_MultilineTitle Title Set1	Controls the horizontal position of the selected line.
MultiLineTitleSelector	All; Line 1-11	CAM_MultilineTitle Title (Set1, Set2, Set3, Title Clear, On, Off)	Controls whether the selected line blinks.
MultiLineTitleText	Text box	CAM_MultilineTitle Title (Set2, Set3)	Selects the line to configure.
TitleBlinking	False; True	CAM_Title Title Set1	Controls whether the single line title blinks.
TitleDisplay	False; True	CAM_Title (On, Off)	Enables single line title display.
TitleFontColor	White; Yellow; Violet; Red; Cyan; Green; Blue	CAM_Title Title Set1	Controls the single line title font color.
TitleOffsetX	0-31	CAM_Title Title Set1	Controls the horizontal position of the single line title.
TitleOffsetY	0-10	CAM_Title Title Set1	Controls the vertical position of the single line title.
TitleText	Text box	CAM_Title Title (Set2, Set3)	Sets the single line title caption text.
DeviceReset	Command	CAM_Initialize Camera	Resets the IP engine and block camera to their power up states.

Table 4: Key Sony Block Camera Features (Continued)

Feature name	Attributes	Sony VISCA feature commands	Description
ZoomDigitalLimitCurrent; ZoomDigitalLimitNext	x1 - x12	No direct mapping	Controls the block camera's digital zoom limit; decimal points are denoted by "p". The **Current** feature shows how the device is currently configured, while the **Next** feature indicates how the feature will be configured after you execute the **DeviceReset** command or after the next power cycle.
ZoomInSpeed	Standard (default); Speed1 - Speed8	No direct mapping	Controls the block camera's Zoom In speed.
ZoomIn	Command	CAM_ZoomTele	Zooms in, optically. When used, this feature starts from the current focal position and continues to the maximum zoom in position. The ZoomStop command stops the ZoomIn command.
ZoomOutSpeed	Standard (default); Speed1 - Speed8	No direct mapping	Controls the block camera's Zoom Out speed.
ZoomOut	Command	CAM_ZoomWide	Zooms out, optically. When used, this feature starts from the current focal position and continues to the maximum zoom out position. The ZoomStop command stops the ZoomOut command.
ZoomStop	Command	CAM_ZoomStop	Cancels a ZoomIn or ZoomOut command.

Chapter 3

iPORT SB-Pro IP Engine Connections

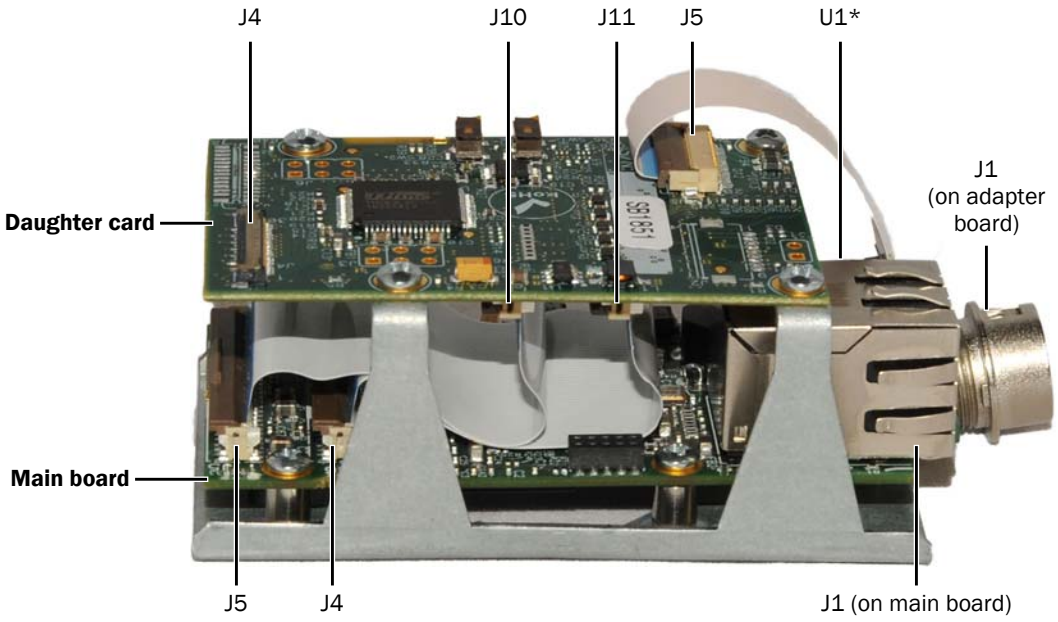
This chapter describes the IP engine connections. It also includes pinouts for the power, GPIO, and serial connector.

The following topics are covered in this chapter:

- "Connector Locations" on page 12
- "Making IP Engine Connections" on page 13
- "Mounting the Power, GPIO, and Serial Connector to an Enclosure Backplate" on page 16
- "Power, GPIO, and Serial Connector Pinouts — Adapter Board" on page 17
- "Power, GPIO, and Serial Connector Pinouts — Daughter Card" on page 18
- "Power, GPIO, and Serial Connector Pinout Mapping" on page 19

Connector Locations

The following figure and table describe the IP engine connectors.



*Not shown. U1 is located on the adapter board.

Table 5: IP Engine Connectors

ID	Location	Type	Description
J4	Daughter card	30-pin connector	Transmits five pairs of serialized low voltage digital signals (LVDS) from the block camera to the IP engine over coaxial cable. Connects to the 24-pin connector on the top of the block camera. **Important:** Take care when connecting the coaxial cable to avoid damaging the cable.
J10, J11	Daughter card	50-pin connector	Allows communication between the daughter card and the main board.
J5	Daughter card	20-pin connector	Provides power and external signals, such as serial communication and GPIO, to the IP engine. Receives 6V to 12V of unfiltered DC input. The power consumption of the IP engine and connected block camera is approximately 7.2W when streaming at full rate, temperature and input voltage dependent.
J4, J5	Main board	50-pin connector	Allows communication between the daughter card and the main board.

Table 5: IP Engine Connectors (Continued)

ID	Location	Type	Description
J1	Main board	RJ-45 Ethernet connector	Interfaces the IP engine to Ethernet networks, as specified in IEEE 802.3. The Ethernet interface can operate at 10, 100, or 1000 Mbps, and supports Internet Protocol Version 4 (IPv4).
J1	Adapter board	12-pin circular connector	Connects power and external signals, such as serial communication and GPIO, to the IP engine.
U1	Adapter board	20-pin connector	Provides power and external signals, such as serial communication and GPIO, to the IP engine. Receives 6V to 12V of unfiltered DC input. The power consumption of the IP engine and connected block camera is approximately 7.2W when streaming at full rate, temperature and input voltage dependent.

Making IP Engine Connections

To assemble the block camera and IP engine, begin by connecting the IP engine to the block camera. Then, make the power, GPIO, and serial connections.

Required Items

You require the following components to connect the IP engine to the block camera:

- 30-pin coax cable
- 20-pin FFC cable
- 12-pin circular connector with adapter board
- Bracket (included with the evaluation kit only)

For more information about the components of the IP engine, see “Model Variants” on page 5. For a material list, see “Material List” on page 63.

Connecting the IP Engine to the Adapter Board and Block Camera

The IP engine supplies power to the block camera. It also sends and receives serial signals, which allow you to send Sony VISCA commands to the block camera, such as zoom and focus.

Power to the assembled block camera and IP engine is provided through the 12-pin circular connector, which receives 6V to 12V of unfiltered DC input.

The power consumption of the IP engine and connected block camera is approximately 7.2W when streaming at full rate, temperature and input voltage dependent.

While this section outlines how to install the IP engine using a rear-mounted orientation (which is the recommended orientation), you can optionally install the IP engine in a top-mounted or side-mounted orientation.

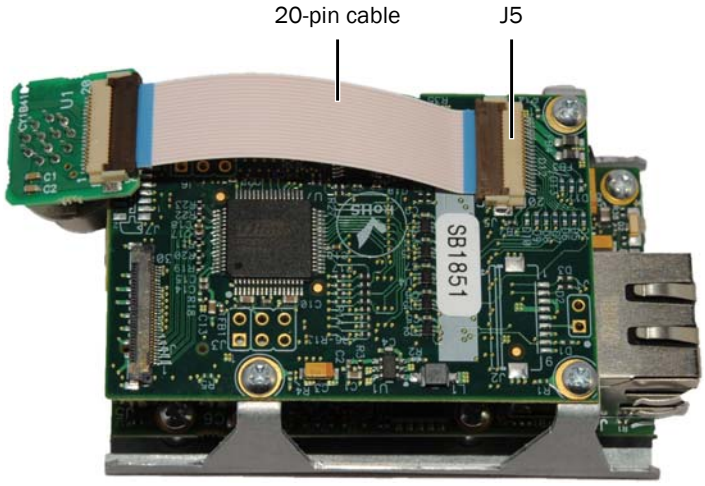
While the illustrations in the following procedure show a chassis, not all kits include a chassis. For more information about what is supplied, see “Model Variants” on page 5.

Do not connect power to the IP engine until all connections are secure and verified.

To connect the IP engine to the adapter board and the block camera

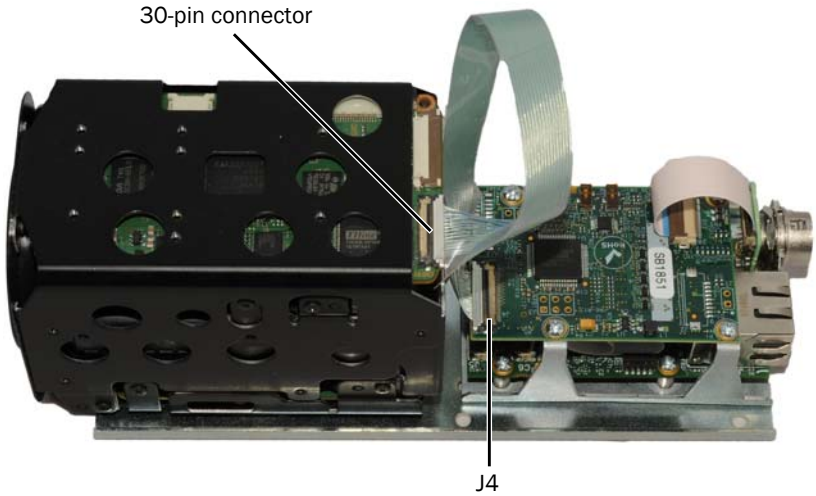
1. Connect the 20-pin cable at J5 of the daughter card to the adapter board.

   The metallic side of the cable ends should be oriented toward the circuit board in both cases.



2. Connect the 30-pin cable to the 30-pin connector on the top of the block camera. Then, connect the other end of the cable to the J4 connector on the daughter card.

The cable ends should be oriented to allow the metallic side of the cable to touch the metallic side of the connector.

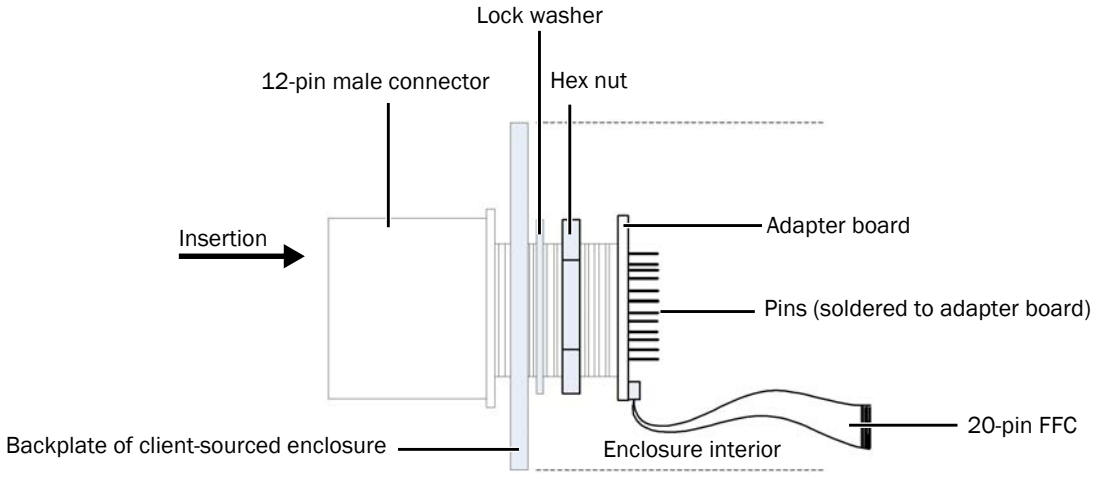


Mounting the Power, GPIO, and Serial Connector to an Enclosure Backplate

The removable 12-pin power, GPIO, and serial circular connector and the corresponding adapter board are suitable for mounting to a client-sourced enclosure.

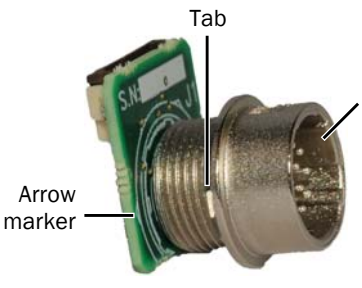
To mount the power, GPIO, and serial connector to an enclosure backplate

1. Insert the 12-pin connector through the external side of the backplate.
2. Secure with washer and hex nut.
3. Connect the adapter board (12 holes) to the base pins of the 12-pin connector through the internal side of the backplate.

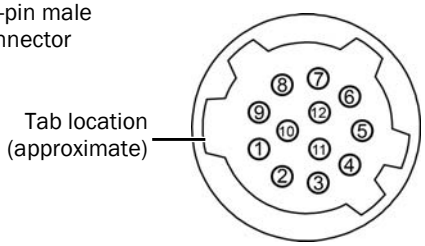


4. Assemble the 12-pin power, GPIO, and serial circular connector to the adapter board by lining up the pins with the adapter board.

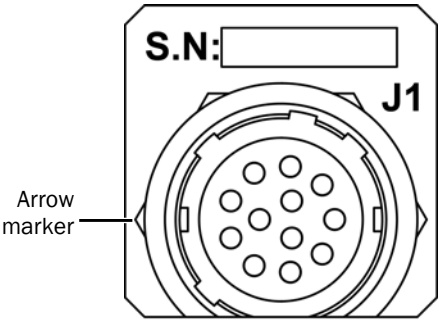
When oriented correctly, the tab on the 12-pin connector aligns with the arrow marker on the adapter board. The following figures show the pin locations, and also show the tab and arrow marker.



Adapter board and 12-pin male connector (assembled)



12-pin male connector



Adapter board (unassembled)

5. Solder the pins of the connector to the adapter board for a secure connection.

Power, GPIO, and Serial Connector Pinouts — Adapter Board

The power, GPIO, and serial pinout descriptions (J1 on the adapter board) are listed in the following table.

The mating connector is a Hirose 12-pin connector, part number HR10A-10P-12P(73).

Table 6: Power, GPIO, and Serial Connector Pinout Descriptions (J1 on the Adapter Board)

Pin	Name	Function	Type	Line	Notes
1	RET	RET	Power return	n/a	Ground
2	VIN	PWR	Power input	n/a	Protected by 600W @ 1.0 ms PP Zener TVS, +/- 16 kV per HBM; receives 6V to 12V unfiltered DC input
3	GPIO_IN3	TTL_IN3	GPIO input	Line3	Protected by ESD suppressors to IEC61000-4-2, Level 4 (+/-8 kV contact, +/-15 kV air discharge)
4	GPIO_OUT2	TTL_OUT2	GPIO output	Line6	ESD information is the same as pin 3
5	GND	Ground	Ground	n/a	Ferrite bead 0.2A, 600 Ohm @ 100 MHz to DGND of the daughter card
6	GPIO_IN2	TTL_IN2	GPIO input	Line2	ESD information is the same as pin 3
7	GPIO_OUT1	TTL_OUT1	GPIO output	Line5	ESD information is the same as pin 3
8	GPIO_IN1	TTL_IN1	GPIO input	Line1	ESD information is the same as pin 3
9	GPIO_OUT0	TTL_OUT0	GPIO output	Line4	ESD information is the same as pin 3
10	GPIO_IN0	TTL_IN0	GPIO input	Line0	ESD information is the same as pin 3
11	RS232_TX	RS232	Output	n/a	Protected by ESD suppressors to IEC61000-4-2, Level 4 (+/-8 kV contact, +/-15 kV air discharge)
12	RS232_RX	RS232	Input	n/a	ESD information is the same as pin 11
Shell	GND_CHASSIS	Chassis ground	Ground	n/a	For the purpose of EMI prevention, provide good electrical contact between the connector shell and the enclosure box.

The GPIO pins on the 12-pin connector are mapped to Line0 through Line6 of the DigitalIOControl\LineSelector feature in the **Device Control** dialog box in the GEVPlayer sample application. Line 7 is not used in the IP engine.For information about configuring the IP engine with GEVPlayer, see “Connecting to the iPORT SB-Pro IP Engine and Configuring General Settings” on page 31.

Power, GPIO, and Serial Connector Pinouts — Daughter Card

The power, GPIO, and serial pinout descriptions (J5 on the daughter card) are listed in the following table.

Table 7: Power, GPIO, and Serial Connector Pinout Descriptions (J5 on the Daughter Card)

Pin	Name	Function	Type
1	RET	RET	Power
2	RET	RET	Power
3	RET	RET	Power
4	POWER	PWR	Power
5	POWER	PWR	Power
6	POWER	PWR	Power
7	GND	Ground	Ground
8	TTL_IN0	GPIO	Input
9	GPIO_OUT0	GPIO	Output
10	GPIO_IN1	GPIO	Input
11	GPIO_OUT1	GPIO	Output
12	GPIO_IN2	GPIO	Input
13	GPIO_OUT2	GPIO	Output
14	GPIO_IN3	GPIO	Input
15	GPIO_OUT3	GPIO	Output
16	N/C	No connect	N/A
17	N/C	No connect	N/A
18	RS232_TX	RS232	Output
19	RS232_RX	RS232	Input
20	GND	Ground	Ground

Power, GPIO, and Serial Connector Pinout Mapping

The mapping of the signals from the 12-pin circular connector (J1 on the adapter board) to the 20-pin connector of the (U1 on the adapter board) and the 12-pin connector (J5 on the daughter card) are listed in the following table.

For signal functions and types, see Table 7 on page 18.

Table 8: Power, GPIO, and Serial Connector Pinout Mapping

Pin (for J1, adapter board)	Pin (for U1, adapter board)	Pin (for J5, daughter card)	Name
1	20	1	RET
1	19	2	RET
1	18	3	RET
2	17	4	VIN/PWR*
2	16	5	VIN/PWR*
2	15	6	VIN/PWR*
5	14	7	GND/EMI_GND**
10	13	8	TTL_IN0***
9	12	9	GPIO_OUT0***
8	11	10	GPIO_IN1***
7	10	11	GPIO_OUT1***
6	9	12	GPIO_IN2***
4	8	13	GPIO_OUT2***
3	7	14	GPIO_IN3***
N/C	6	15	GPIO_OUT3***
N/C	5	16	N/C
N/C	4	17	N/C
11	3	18	RS232_TX***
12	2	19	RS232_RX***
5	1	20	GND/EMI_GND**

* Protected by 600W @ 1.0 ms PP Zener TVS, +/- 16 kV per HBM.

** Ferrite bead 0.2A, 600 Ohm @ 100 MHz to DGND of the daughter card.

*** Protected by ESD suppressors to IEC61000-4-2, Level 4 (+/-8 kV contact, +/-15 kV air discharge).

Chapter 4

Status LEDs

The status LEDs indicate the operating status of the IP engine's network connection and firmware. The following figure and table describe the status LEDs.

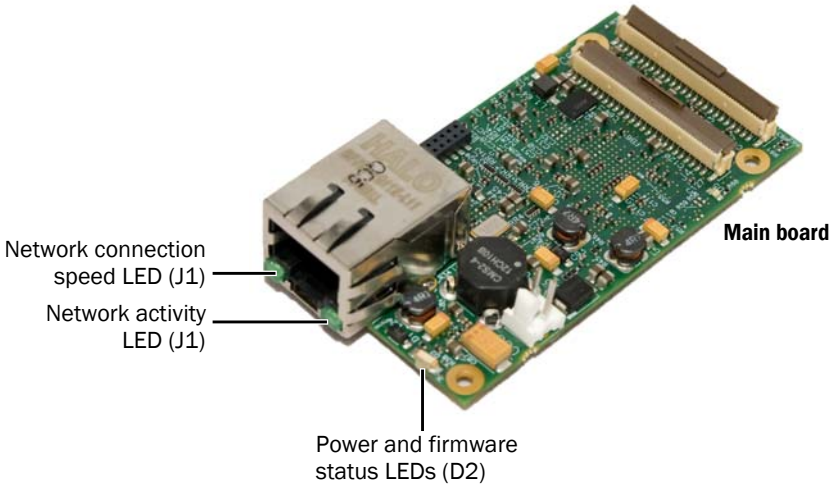


Table 9: Status LEDs

LED	ID	Description
Network activity	J1	**Green (solid).** Network connection. **Green (blinking).** Data receive/transmit. **Off.** No connection.
Network connection speed	J1	**Green.** 1 Gbps connection. **Off.** No connection, 10 Mbps connection, or 100 Mbps connection.
Power/FPGA	D2	**Off.** No power. **Green.** Power on. **Orange.** Main firmware load is corrupted, or a slide switch is set incorrectly, forcing the IP engine to use the backup firmware load.*

*For information about the slide switches that are used to specify the firmware load, see "Changing to the Backup Firmware Load" on page 52.

Chapter 5

Installing the SDK

This chapter describes how to install the eBUS SDK, and also provides information about installing the drivers that are best suited for your system.

Before you can configure and control your GigE Vision camera, you must install the eBUS SDK and driver.

The following topics are covered in this chapter:

- "Installing the eBUS SDK" on page 24
- "Installing the Driver and Configuring the NIC" on page 25

Installing the eBUS SDK

You can install the Pleora eBUS SDK on your computer to configure and control your GigE Vision camera. Consult the *GEVPlayer Quick Start Guide* or *GEVPlayer User Guide* for information about setting up and configuring your camera for connection to the IP engine.

The Pleora Technologies eBUS SDK contains an extensive library of sample applications, with source code, to create working applications for device configuration and control, image and data acquisition, and image display and diagnostics.

It is possible for you to configure the IP engine and GigE Vision compliant video sources using other GenICam compliant software, however, this guide provides you with the instructions you need to use the Pleora GEVPlayer application.

Installing the Driver and Configuring the NIC

Before you can configure the IP engine, use the Driver Installation Tool (included with the eBUS SDK) to install the correct driver. Then, set up your NIC. There are three choices of driver, depending on the NIC installed in your computer:

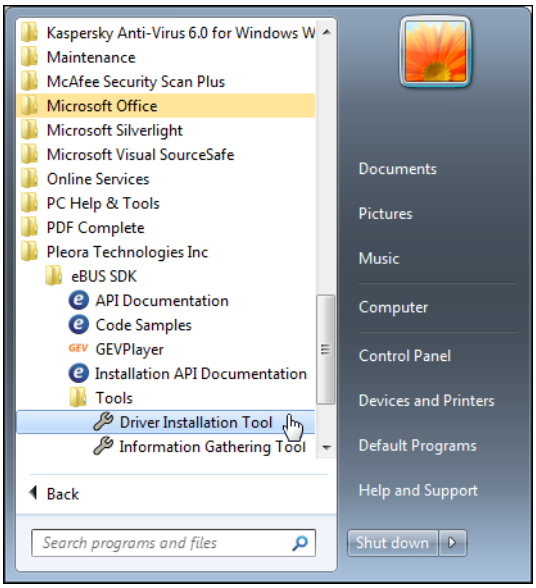
- Manufacturer Driver
- eBUS Universal Pro (for most NICs)
- eBUS Optimal (limited to particular Intel® NICs)

To start the Driver Installation Tool and install an eBUS driver

1. Click **Start**, point to **All Programs > Pleora Technologies Inc > eBUS SDK > Tools**, right-click **Driver Installation Tool** and then click **Run as administrator**.

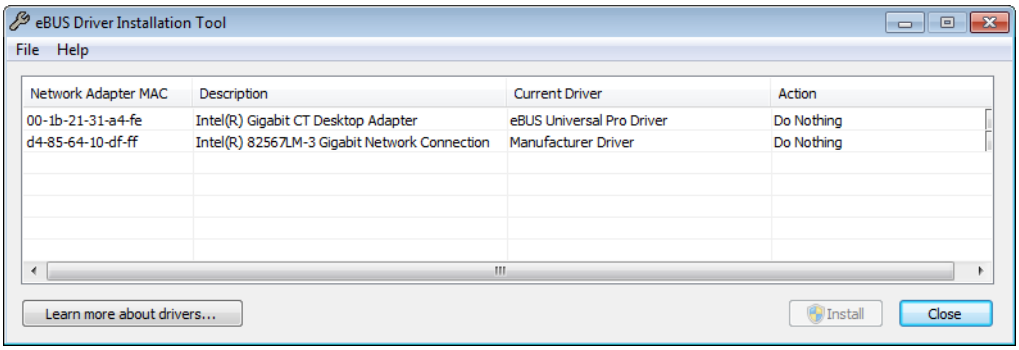
   To use the Driver Installation Tool, you must have administrator privileges for your computer. Consult Windows documentation for more information.

The instructions in this procedure are based on the Windows 7 operating system. The steps may vary depending on your computer's operating system.



2. Select a driver that is suitable for your computer's NIC. If you require additional information to help choose the most appropriate driver, click **Learn more about drivers**.

3. Click **Install** and follow the prompts to complete the driver installation.



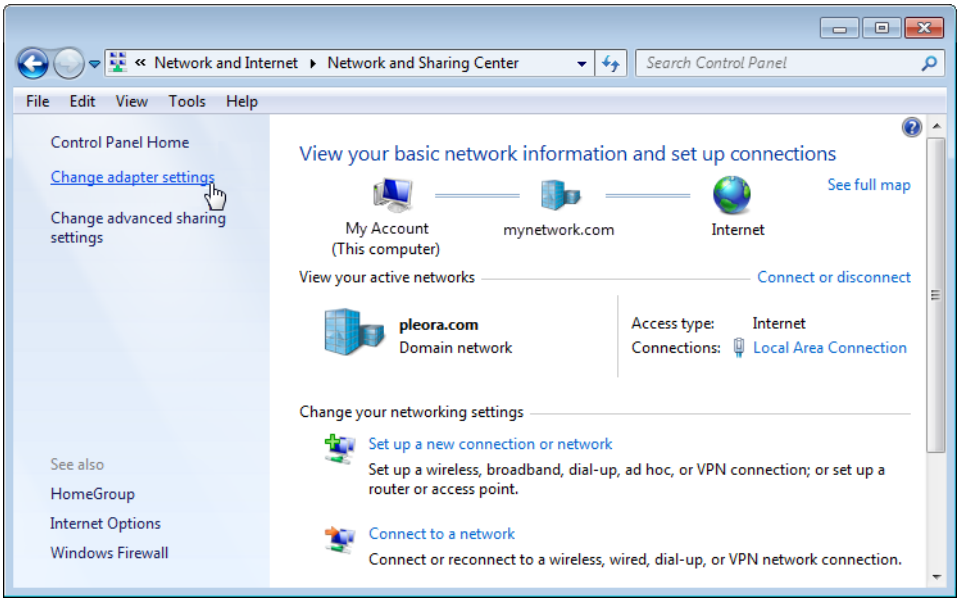
To configure an IP address for the NIC

1. In the Windows Control Panel, click **Network and Internet**.

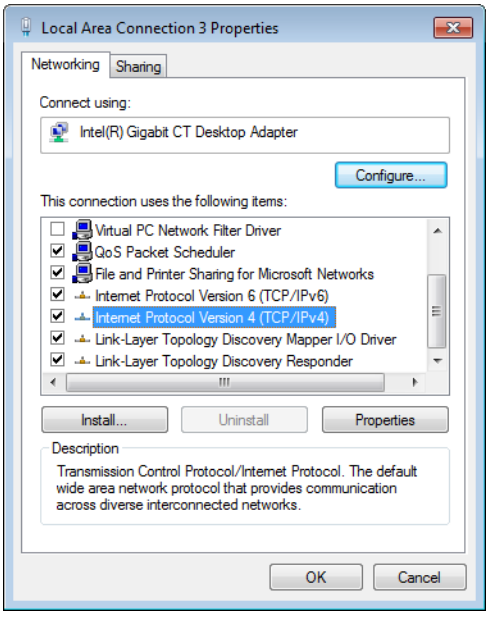
The instructions in this procedure are based on the Windows 7 operating system. The steps may vary depending on your computer's operating system.

2. Click **Network and Sharing Center**.

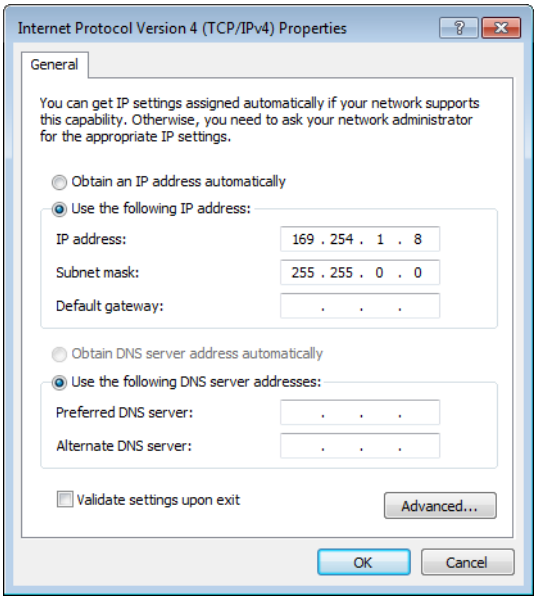
3. In the left-hand panel, click **Change adapter settings**.


Network and Internet ▸ Network and Sharing Center
Search Control Panel
File Edit View Tools Help
Control Panel Home
Change adapter settings
Change advanced sharing settings
View your basic network information and set up connections
See full map
My Account (This computer)
mynetwork.com
Internet
View your active networks
Connect or disconnect
pleora.com
Domain network
Access type: Internet
Connections: Local Area Connection
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.
See also
HomeGroup
Internet Options
Windows Firewall

4. Right-click the NIC and then click **Properties**.
5. Click **Internet Protocol Version 4 (TCP/IPv4)** and then click **Properties**.



6. Select **Obtain an IP address automatically** or **Use the following IP address** to give the NIC an IP address.

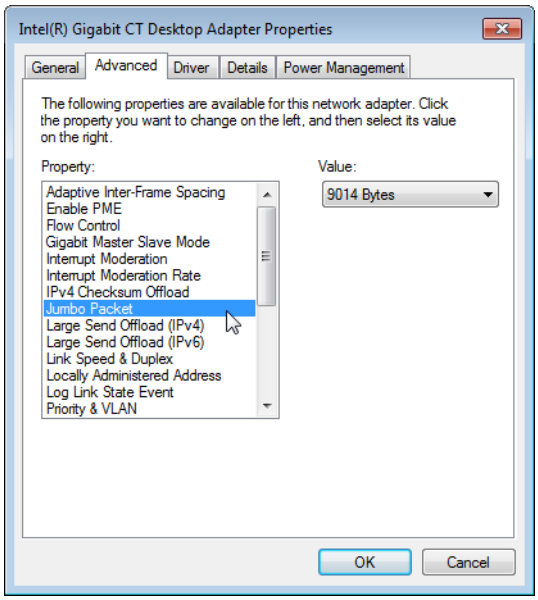

Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
169 . 254 . 1 . 8
Subnet mask:
255 . 255 . 0 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Static IP addressing allows for quicker detection and connection times on networks without a DHCP server, as the NIC does not have to negotiate a Link-Local Address (LLA).

7. Close the open dialog boxes to apply the changes.

8. Optionally, configure the NIC for jumbo packets. Using jumbo packets allows you to increase system performance. However, you must ensure your NIC and GigE switch (if applicable) support jumbo packets.

   To complete this task, right-click the NIC and click **Properties**. Then, click **Configure**. The exact configuration procedure, as well as the jumbo packet size limit, depends on the NIC.



While not mandatory, you may wish to disable the network firewall and anti-virus software to improve system performance. Additionally, certain default settings on the NIC may not be appropriate for receiving high-throughput image streams, such as the number of Rx Descriptors. Refer to the *Network Adapters Knowledge Base Technical Note*, available at the Pleora Technologies Support Center.

Chapter 6

Connecting to the iPORT SB-Pro IP Engine and Configuring General Settings

After you have connected to the IP engine, you can provide it with a unique IP address on your network and configure the IP engine for either unicast or multicast.

You can also configure the buffers to reduce the likelihood of lost packets.

The GEVPlayer application is documented in the *GEVPlayer Quick Start Guide* and the *GEVPlayer User Guide*. The *iPORT SB-Pro IP Engine User Guide* provides you with the GEVPlayer instructions and overviews required to set up and configure the block camera and IP engine.

The following topics are covered in this chapter:

- "Connecting the Ethernet Cables and Confirming Video Streaming" on page 32
- "Starting GEVPlayer and Connecting to a Device" on page 33
- "Providing the IP Engine with an IP Address" on page 34
- "Unicast Network Configuration" on page 35
- "Multicast Network Configuration" on page 38
- "Configuring the Buffers" on page 46
- "Implementing the eBUS SDK" on page 46

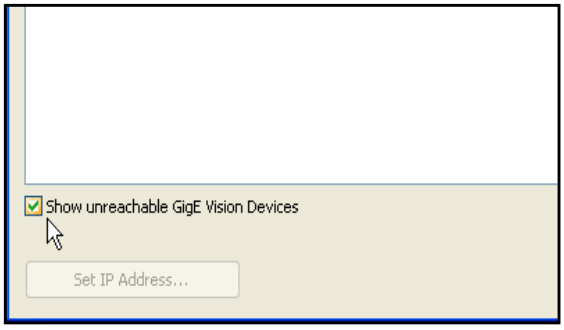
Connecting the Ethernet Cables and Confirming Video Streaming

The IP engine can communicate with your computer using either a back-to-back connection or by connecting to a GigE switch. This section explains how to connect the IP engine to a GigE switch to confirm that video is streaming.

To connect the Ethernet cables and confirm video streaming

1. Connect a CAT5e /CAT6 Ethernet cable to the RJ-45 Ethernet connector on your NIC. Then, connect the other end of the cable to the RJ-45 connector on your GigE switch.
2. Apply power.
3. Start GEVPlayer from the Windows **Start** menu.
4. Click **Select/Connect**.

   If the device does not appear in the list, click the **Show unreachable GigE Vision Devices** check box to show all devices.



5. In the **GEV Device Selection** dialog box, click the device, such as an IP engine.

If the IP address is not valid, a warning ( ) appears in the **GEV Device Selection** dialog box. Provide the device with an IP address, as outlined in "Providing the IP Engine with an IP Address" on page 34.

6. Click **OK**.

   GEVPlayer is now connected to the device.
7. Click **Play** to stream live video.
8. After you confirm that video is streaming, close GEVPlayer.

If video does not stream, see the tips provided in "System Troubleshooting" on page 47.

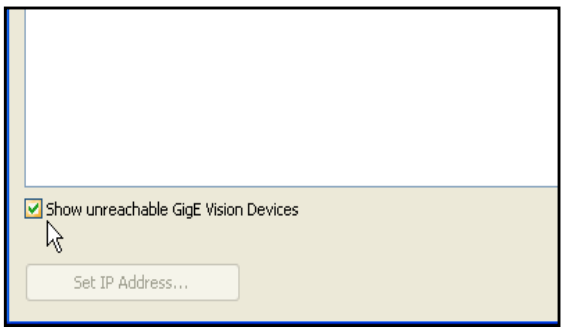
Starting GEVPlayer and Connecting to a Device

You can start the GEVPlayer sample application (included with the eBUS SDK) to connect to a device. GEVPlayer lets you configure and control your GigE Vision camera.

To start GEVPlayer and connect to a device

1. Start GEVPlayer from the Windows **Start** menu.
2. Click **Select/Connect**.

   If the device does not appear in the list, click the **Show unreachable GigE Vision Devices** check box to show all devices.



3. In the **GEV Device Selection** dialog box, click the device, such as an IP engine.

If the IP address is not valid, a warning ( ) appears in the **GEV Device Selection** dialog box. Provide the device with an IP address, as outlined in "Providing the IP Engine with an IP Address" on page 34.

4. Click **OK**.

   GEVPlayer is now connected to the device.

Providing the IP Engine with an IP Address

The IP engine requires an IP address to communicate on a video network. This address must be on the same subnet as the computer that is performing the configuration and receiving the image stream.

To provide the IP engine with an IP address

1. Start GEVPlayer.
2. Click **Select/Connect**.
3. Click the IP engine.
4. Click **Set IP Address**.
5. Provide the IP engine with a valid IP address and subnet mask. You can optionally provide a default gateway.

If you are using a unicast network configuration, the management entity/data receiver and the IP engine must be on the same subnet. The unicast network configuration is outlined in "Unicast Network Configuration" on page 35.

6. Click **OK** to close the **Set IP Address** dialog box.
7. Click **OK** to close the **GEV Device Selection** dialog box.

Configuring an Automatic/Persistent IP Address

The Device Control dialog box allows you to configure a persistent IP address for the IP engine. Alternatively, the IP engine can be configured to automatically obtain an IP address using Dynamic Host Configuration Protocol (DHCP) or Link Local Addressing (LLA). The IP engine uses its persistent IP address first, but if this option is set to **False**, it can be configured to attempt to obtain an address from a DHCP server. If this fails, it will use LLA to find an available IP address. LLA cannot be disabled and is always set to **True**.

To configure a persistent IP address

1. Start GEVPlayer and connect to the IP engine.

   For more information, see "To start GEVPlayer and connect to a device" on page 33.
2. Click **Device control** in the **Parameters and Controls** section.
3. In the **TransportLayerControl** category, set the **GevCurrentIPConfigurationPersistentIP** feature to **True**.
4. Set the **GevPersistentIPAddress** feature to a valid IP address in the **GevPersistentIPAddress** field.
5. Set the **GevPersistentSubnetMask** feature to a valid subnet mask address.
6. Optionally, enter a valid default gateway in the **GevPersistentDefaultGateway** field.
7. Close the **Device Control** dialog box.
8. Power cycle the IP engine and connected block camera.

To automatically configure an IP address

1. Start GEVPlayer and connect to the IP engine.

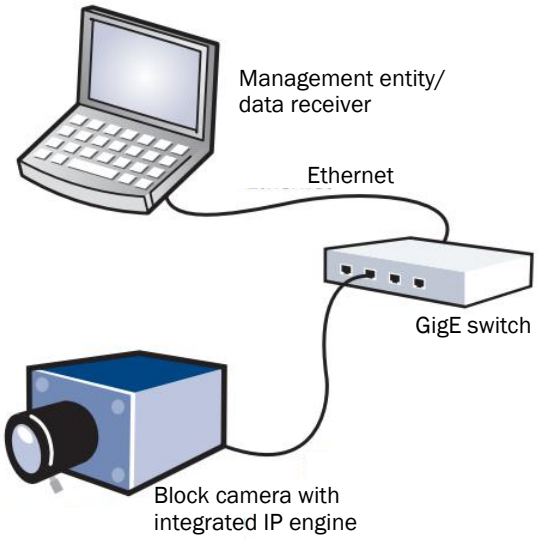
   For more information, see “To start GEVPlayer and connect to a device” on page 33.
2. Click **Device control** in the **Parameters and Controls** section.
3. In the **TransportLayerControl** category, set the **GevCurrentIPConfigurationPersistentIP** feature to **False**.
4. Set the **GevCurrentIPConfigurationLLA** and/or **GevCurrentIPConfigurationDHCP** values to **True**, depending on the type of automatic addressing you require.
5. Close the **Device Control** dialog box.
6. Power cycle the IP engine and connected block camera.

Unicast Network Configuration

In a unicast configuration, a block camera with an integrated IP engine is connected to a GigE switch that sends a stream of video over Ethernet to the computer. Alternatively, the IP engine can be connected directly to the computer.

The computer is configured as both a data receiver and controller, and serves as a management entity for the IP engine.

Figure 1: Unicast Network Configuration



Required Items — Unicast Network Configuration

You require the following components to set up a unicast network configuration:

- Block camera with integrated IP engine and cables
- 6-12V power supply
- CAT5e or CAT6 Ethernet cables (quantity: 1)
- GigE switch and an additional CAT5e or CAT6 Ethernet cable (optional)
- Desktop computer or laptop with eBUS SDK, version 2.0.0 (or later) installed

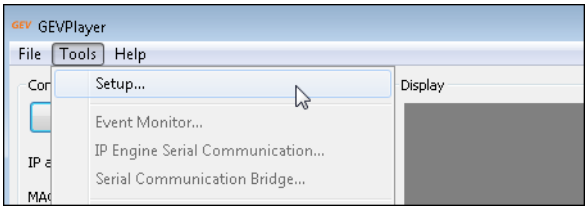
IP Engine Configuration — Unicast Network Configuration

After you have connected and applied power to the hardware components, use GEVPlayer to configure the IP engine.

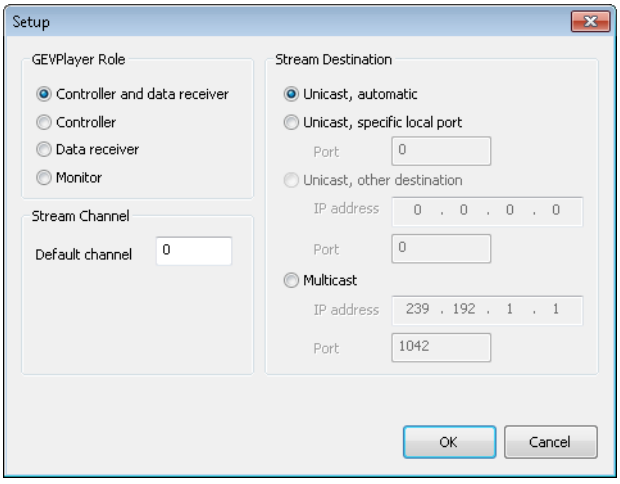
The IP engine firmware requires that the **AnswerTimeout** parameter be equal or greater than 5000 ms. You can access this parameter through the main menu of the GEVPlayer application: **Communication Control/Communication/AnswerTimeout**.

To configure the IP engine for a unicast network configuration

1. Start **GEVPlayer**.
2. Click **Tools > Setup**.



3. Under **GEVPlayer Role**, click **Controller and data receiver**.

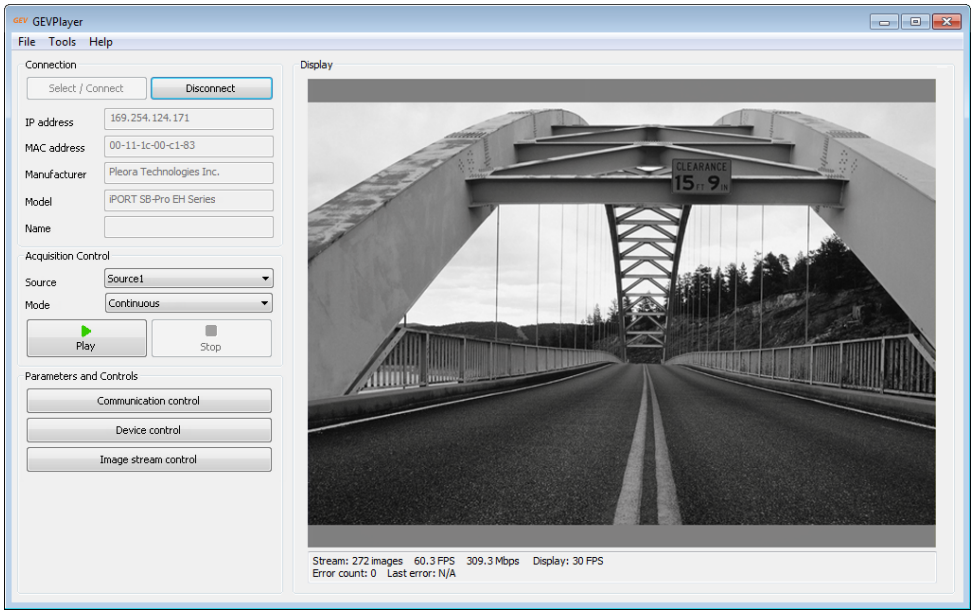


4. Under **Stream Destination**, click **Unicast, automatic**.
5. Click **OK**.

6. Connect to the IP engine.

   For more information, see “To start GEVPlayer and connect to a device” on page 33.

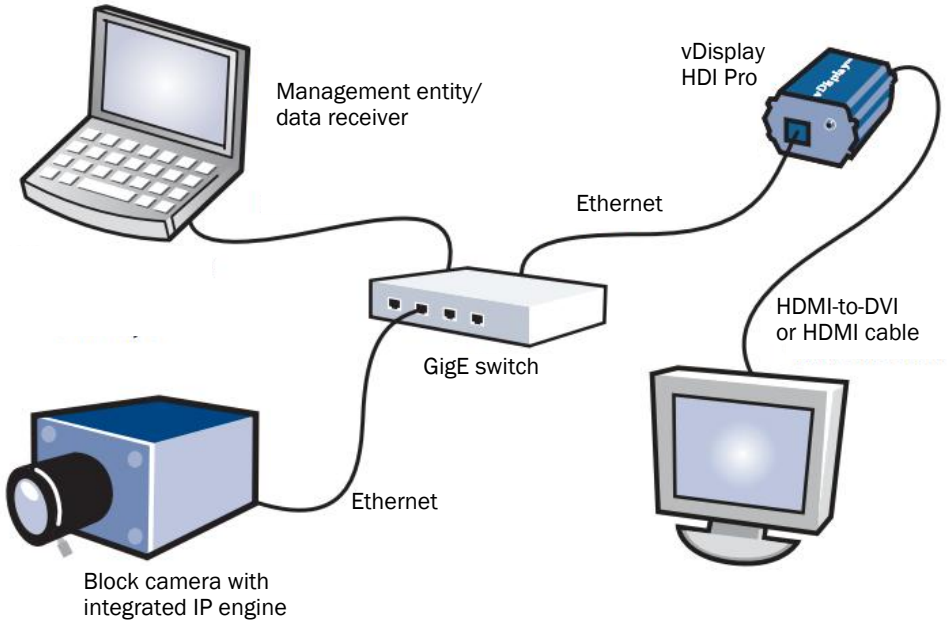
7. Click **Play** to view live video.



Multicast Network Configuration

In a multicast network configuration, the iPORT SB-Pro IP engine is connected to a GigE switch, and sends a stream of video over Ethernet simultaneously to both a computer and to a vDisplay HDI-Pro IP engine. Then, the vDisplay HDI-Pro IP engine converts it to video for display on a monitor.

Figure 2: Multicast Network Configuration



Required Items — Multicast Network Configuration

You require the following components to set up a multicast network configuration:

- Block camera with integrated iPORT SB-Pro IP engine and cables
- 6-12V power supply
- vDisplay HDI-Pro IP engine and corresponding power supply
- Compatible display monitor
- Cable to connect the vDisplay HDI-Pro IP engine to the display monitor
- CAT5e or CAT6 Ethernet cables (quantity: 3)
- GigE switch (IGMP v2-compatible)
- Desktop computer or laptop with the eBUS SDK, version 2.0.0 (or later) installed

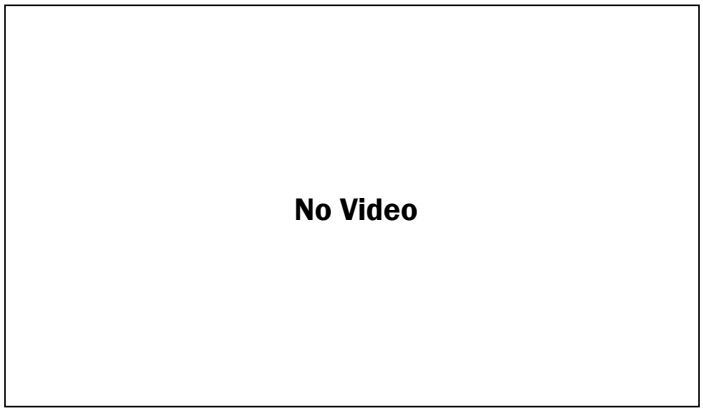
Connecting the Hardware and Power

The following procedure explains how to connect the power, network, and data cables to the vDisplay HDI-Pro IP engine and SB-Pro IP engine.

To connect the network and data cables to the vDisplay HDI-Pro IP engine and SB-Pro IP engine and apply power

1. Connect one end of a CAT5e/CAT6 cable to the vDisplay HDI-Pro IP engine Ethernet connector. Attach the other end to an available port on the GigE switch.
2. Connect one end of a CAT5e/CAT6 cable to the iPORT SB-Pro IP engine Ethernet connector. Attach the other end to an available port on the GigE switch.
3. Connect one end of a CAT5e/CAT6 cable to the Ethernet connector on your computer's NIC. Attach the other end to an available port on the GigE switch.
4. Attach one end of the video cable to the display monitor. Attach the other end to the HDI connector on the vDisplay HDI-Pro IP engine.
5. Apply power to the devices.

   The message **No Video** appears on the display monitor.



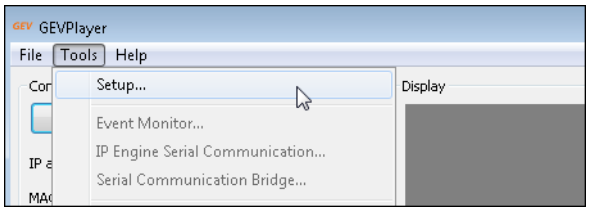
Configuring the vDisplay HDI-Pro IP Engine and iPORT SB-Pro IP Engine for a Multicast Network Configuration

After you have connected and applied power to the hardware components, use GEVPlayer to configure the vDisplay HDI-Pro IP engine and iPORT SB-Pro IP engine for multicast configuration. You may want to launch two instances of GEVPlayer to perform both configurations. Begin by configuring the vDisplay HDI-Pro IP engine.

The vDisplay HDI-Pro IP engine application is documented in the *vDisplay HDI-Pro IP Engine User Guide*. The *iPORT SB-Pro IP Engine User Guide* provides you with the vDisplay HDI-Pro IP engine instructions and overviews required to set up and configure the vDisplay HDI-Pro IP engine for a multicast configuration.

To configure the vDisplay HDI-Pro IP engine for a multicast network configuration

1. Start **GEVPlayer**.
2. Click **Tools > Setup**.



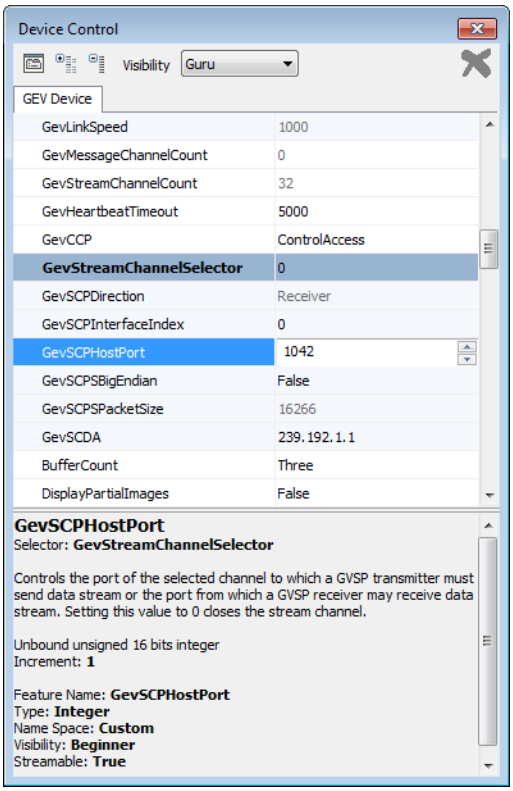
3. Under **GEVPlayer Role**, click **Controller**.

   You do not need to specify the **Stream Destination**, as the stream destination is not applicable to a video receiver.

4. Connect to the vDisplay HDI-Pro IP engine.

   For more information, see "To start GEVPlayer and connect to a device" on page 33.

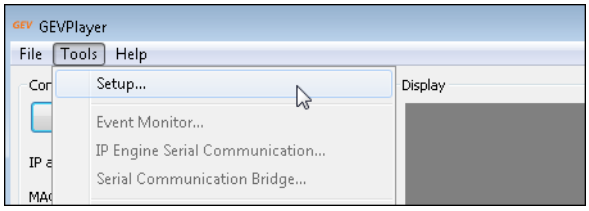
5. Click **Device control**.
6. In the **TransportLayerControl** category, set **GevSCPHostPort** to a streaming channel port (for example, 1042).



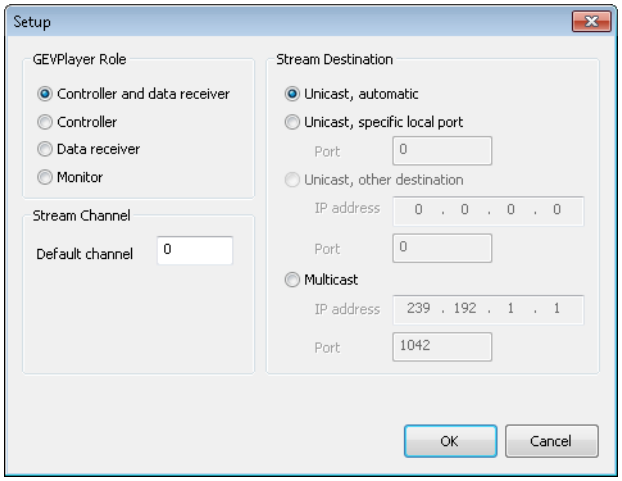
7. Set **GevSCDA** to a multicast address (for example, 239.192.1.1).
8. Close the **Device Control** dialog box.
9. Now, configure the iPORT SB-Pro IP engine, as outlined in "To configure the iPORT SB-Pro IP engine for a multicast network configuration" on page 42.

To configure the iPORT SB-Pro IP engine for a multicast network configuration

1. Start an additional instance of GEVPlayer.
2. Click **Tools** > **Setup**.



3. Under **GEVPlayer Role**, click **Controller and data receiver**.



4. Under **Stream Destination**, click **Multicast** and enter the **IP address** and **Port** number.

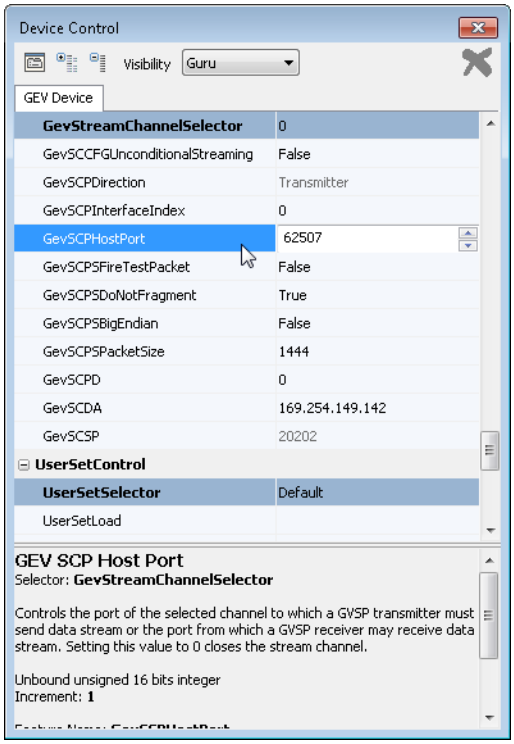
   The address and port must be identical to that configured for the vDisplay HDI-Pro IP engine in step 6 and 7 of "To configure the vDisplay HDI-Pro IP engine for a multicast network configuration" on page 40.

5. Click **OK**.
6. Connect to the iPORT SB-Pro IP engine.

   For more information, see "To start GEVPlayer and connect to a device" on page 33.

7. Click **Device control**.

8. Click **Guru** in the **Visibility** list.
9. In the **TransportLayerControl** category, ensure that the multicast IP address in the **GevSCDA** field and the port in the **GevSCPHostPort** field are correct. They are configured automatically to the values set in steps 3-5 of this procedure.

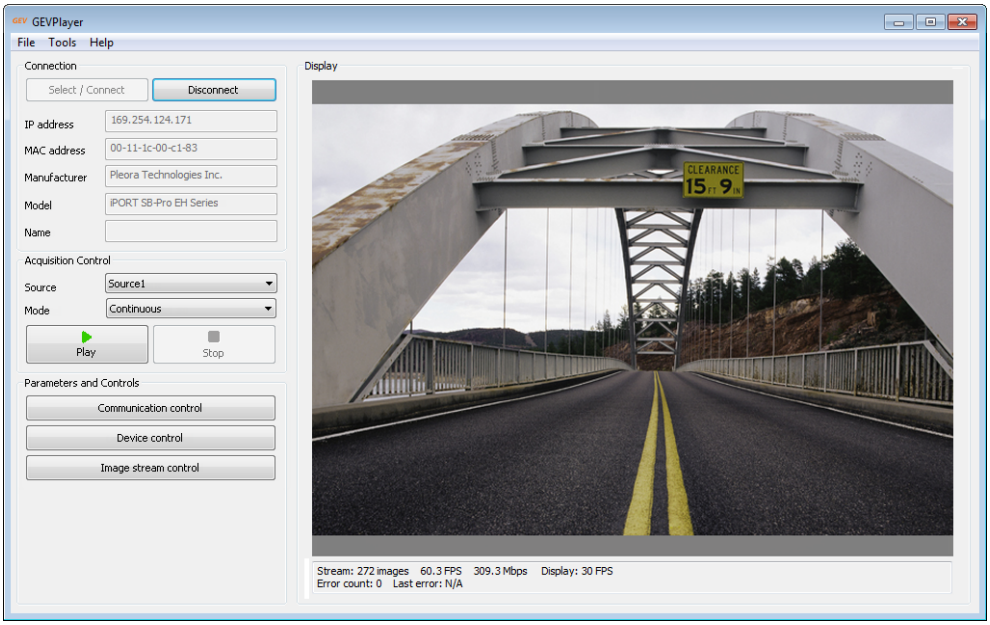


10. In the **ImageFormatControl** category, ensure a progressive video mode appears in the **SonyBlockVideoModeCurrent** list, not an interlaced video mode (because the vDisplay IP engine does not perform deinterlacing).

    To change the video mode, click a mode in the **SonyBlockVideoModeNext** list, close the **Device Control** dialog box, and then click **DeviceReset** (or power cycle the IP engine and block camera).

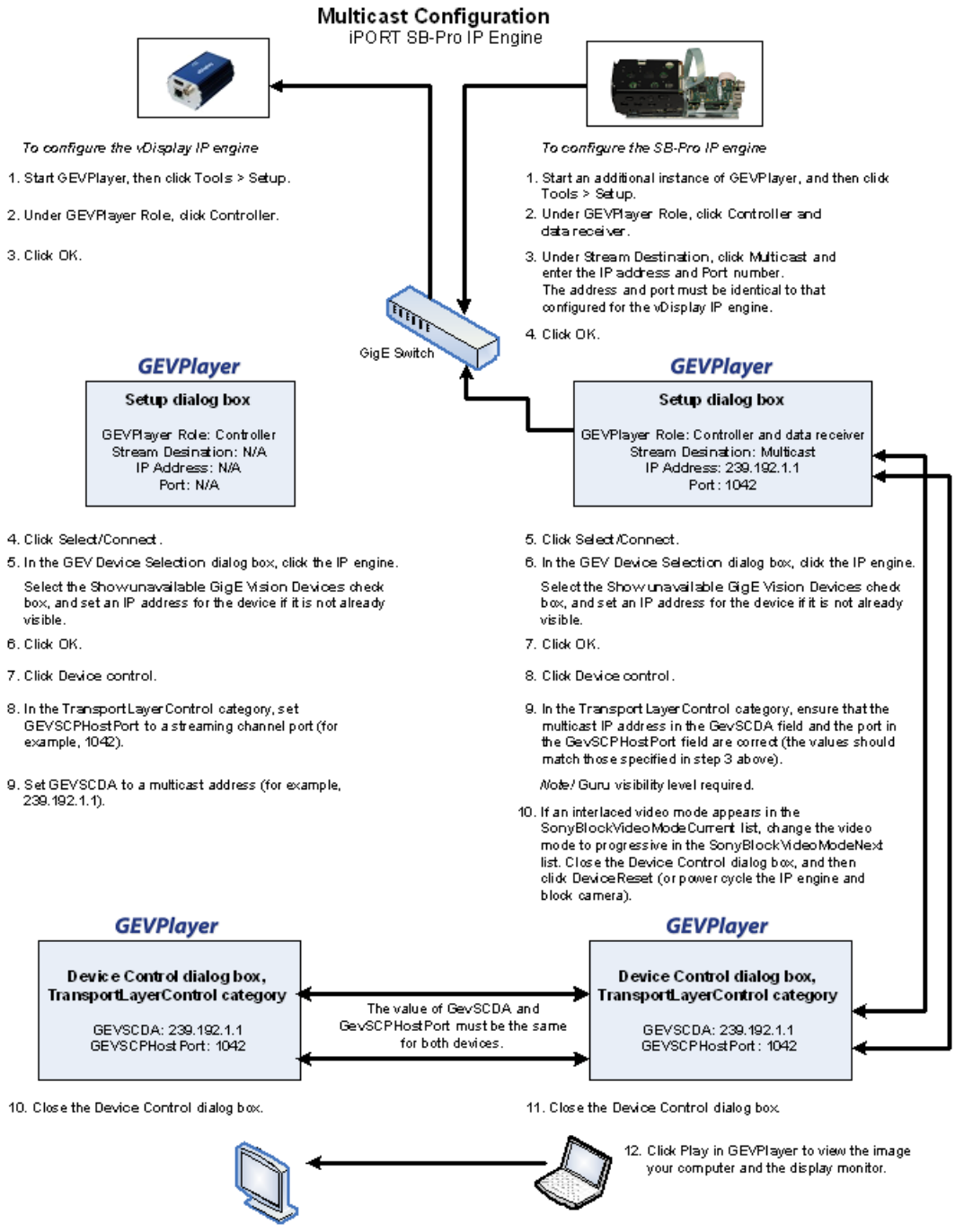
    The connection between your computer and the IP engine disconnects and the **Device Control** dialog box closes. Reconnect to the IP engine and then reopen the **Device Control** dialog box.

11. Close the **Device Control** dialog box.
12. Click **Play** to view the source video both on the computer and the display monitor.



The multicast image is shown on the display monitor, as shown below.

An overview of the steps for the simple multicasting of the iPORT SB-Pro IP engine in conjunction with the vDisplay HDI-Pro IP engine is shown in the following figure.


Multicast Configuration
iPORT SB-Pro IP Engine
To configure the vDisplay IP engine
1. Start GEVPlayer, then click Tools > Setup.
2. Under GEVPlayer Role, click Controller.
3. Click OK.
To configure the SB-Pro IP engine
1. Start an additional instance of GEVPlayer, and then click Tools > Setup.
2. Under GEVPlayer Role, click Controller and data receiver.
3. Under Stream Destination, click Multicast and enter the IP address and Port number. The address and port must be identical to that configured for the vDisplay IP engine.
4. Click OK.
GigE Switch
GEVPlayer
Setup dialog box
GEVPlayer Role: Controller
Stream Desination: N/A
IP Address: N/A
Port: N/A
GEVPlayer
Setup dialog box
GEVPlayer Role: Controller and data receiver
Stream Desination: Multicast
IP Address: 239.192.1.1
Port: 1042
4. Click Select/Connect.
5. In the GEV Device Selection dialog box, click the IP engine.
Select the Show unavailable GigE Vision Devices check box, and set an IP address for the device if it is not already visible.
6. Click OK.
7. Click Device control.
8. In the TransportLayerControl category, set GEVSCPHostPort to a streaming channel port (for example, 1042).
9. Set GEVSCDA to a multicast address (for example, 239.192.1.1).
5. Click Select/Connect.
6. In the GEV Device Selection dialog box, click the IP engine.
Select the Show unavailable GigE Vision Devices check box, and set an IP address for the device if it is not already visible.
7. Click OK.
8. Click Device control.
9. In the TransportLayerControl category, ensure that the multicast IP address in the GevSCDA field and the port in the GevSCPHostPort field are correct (the values should match those specified in step 3 above).
Note! Guru visibility level required.
10. If an interlaced video mode appears in the SonyBlockVideoModeCurrent list, change the video mode to progressive in the SonyBlockVideoModeNext list. Close the Device Control dialog box, and then click DeviceReset (or power cycle the IP engine and block camera).
GEVPlayer
Device Control dialog box, TransportLayerControl category
GEVSCDA: 239.192.1.1
GEVSCPHostPort: 1042
The value of GevSCDA and GevSCPHostPort must be the same for both devices.
GEVPlayer
Device Control dialog box, TransportLayerControl category
GEVSCDA: 239.192.1.1
GEVSCPHostPort: 1042
10. Close the Device Control dialog box.
11. Close the Device Control dialog box.
12. Click Play in GEVPlayer to view the image your computer and the display monitor.

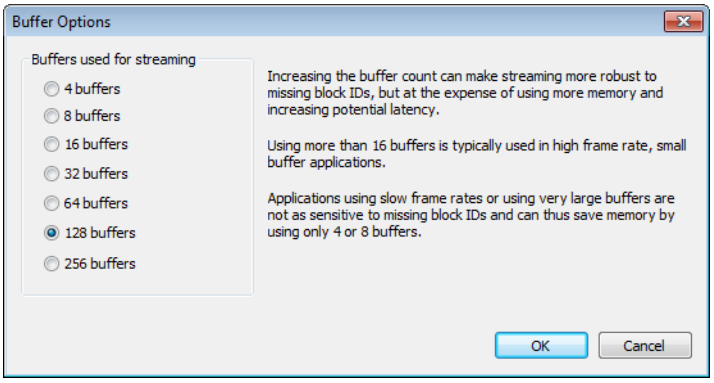
Configuring the Buffers

You can increase the buffer count in GEVPlayer to reduce the impact of lost and out-of-order packets, and to make streaming more robust. A high number of buffers are needed in high frame rate applications, while a small number of buffers are needed for lower frame rates. Applications using a high number of buffers might experience greater latency.

To configure the buffers

1. Start GEVPlayer and connect to the IP engine.
   For more information, see "To start GEVPlayer and connect to a device" on page 33.
2. Click **Tools** > **Buffer Options**.
3. Click the buffer option that suits your requirements.
4. Click **OK**.

Default size for streaming is 16 buffers.


Buffer Options
Buffers used for streaming
4 buffers
8 buffers
16 buffers
32 buffers
64 buffers
128 buffers
256 buffers
Increasing the buffer count can make streaming more robust to missing block IDs, but at the expense of using more memory and increasing potential latency.
Using more than 16 buffers is typically used in high frame rate, small buffer applications.
Applications using slow frame rates or using very large buffers are not as sensitive to missing block IDs and can thus save memory by using only 4 or 8 buffers.
OK
Cancel

Implementing the eBUS SDK

You can create your own image acquisition software for the IP engine. Consult the *eBUS SDK C++ Reference Guide* for information about creating custom image acquisition software.

Chapter 7

System Troubleshooting

This chapter provides you with troubleshooting tips and recommended solutions for issues that can occur during configuration, setup, and operation of the IP engine with the Sony FCB-EH6300.

Not all scenarios and solutions are listed here. You can refer to the Pleora Technologies Support Center at www.pleora.com for additional support and assistance.

The Pleora Technologies Support Center can help you to learn more about integrating Pleora Technologies products. Use keywords to search the Pleora Technologies knowledge database for solutions and suggestions to optimize and troubleshoot Pleora Technologies products. The knowledge database includes a description of the issue and the suggested solution for your search results.

Details for creating a customer account are available at the Pleora Technologies Support Center.

Refer to the product release notes that are available at the Pleora Technologies Support Center for known issues and other product features.

Troubleshooting Tips

The scenarios and known issues listed in the following table are those that you might encounter during the setup and operation of your IP engine. Not all possible scenarios and errors are presented. The symptoms, possible causes, and resolutions depend upon your particular network, setup, and operation.

If you perform the resolution for your issue and the issue is not corrected, we recommend you review the other resolutions listed in this table. Some symptoms may be interrelated.

Table 10: Troubleshooting Tips

Symptom	Possible cause	Resolution
SDK cannot detect or connect to the IP engine	Power not supplied to the IP engine	Both the detection and connection to the IP engine will fail if power is not supplied to the device. Verify that the network activity LED (JI on the main board) is either green (power on) or orange (flashes when data is streaming). For information about the LEDs, see “Status LEDs” on page 21. Verify the power connection and ensure a minimum of 6V is present at the connector (maximum: 12V). Re-try the connection to the IP engine with GEVPlayer.
	IP engine not connected to the network	Verify that the network activity LED and network connection speed LED are active (J1 on the main board). If these LEDs are illuminated, check the LEDs on your network switch to ensure the switch is functioning properly. If the problem continues, connect the IP engine directly to the computer to verify its operation. For information about the LEDs, see “Status LEDs” on page 21.
	IP engine and computer are not on the same subnet	Video might not appear in GEVPlayer if the IP engine and the computer running GEVPlayer are not on the same subnet. Ensure that these devices are on the same subnet. In addition, ensure that these devices are connected using valid gateway and subnet mask information. You can view the IP engine IP address information in the **Available GigE Vision Devices** list in GEVPlayer. A red icon appears beside the GigE Vision device if there is an invalid IP configuration.
SDK detects the IP engine, however an error message appears, which indicates that the connection could not be completed	Insufficient power	Ensure that 6V to 12V of unfiltered DC input is being provided to the IP engine. The power consumption of the IP engine and connected block camera is approximately 7.2W when streaming at full rate, temperature and input voltage dependent.

Table 10: Troubleshooting Tips (Continued)

Symptom	Possible cause	Resolution
SDK is able to connect, but no video appears in GEVPlayer	Anti-virus software or firewalls blocking transmission	Video might not appear in GEVPlayer because of anti-virus software or firewalls on your network. Disable all virus scanning software and firewalls, and re-attempt a connection to the IP engine with GEVPlayer.
	IP engine not configured correctly to support multicast configuration	Video might not appear on the display if you have not configured the IP engine for a multicast video network configuration. The IP engine and all multicast receivers (for example, a vDisplay HDI-Pro IP engine) must have identical values for both the **GevSCDA** and **GevSCPHostPort** attributes in the **TransportLayerControl** section. For more information, see "Configuring the vDisplay HDI-Pro IP Engine and iPORT SB-Pro IP Engine for a Multicast Network Configuration" on page 40.
	30-pin coax cable connected improperly	Video does not appear on the display/computer after you connect the IP engine to GEVPlayer and click **Play**. When you click **ImageStreamControl** in GEVPlayer and view the **AcquisitionRate**, **0** appears. To correct this issue: 1. Click **Stop** in GEVPlayer. 2. Click **GEV Device control**. 3. Click **Expert** in the **Visibility** list. 4. Click **TestImageSelector** to select **IPEngineTestPattern**. 5. Click **Start**. If the test pattern is displayed, click **Stop** and verify that the 30-pin coax cable is securely connected. 6. Click **Play** in GEVPlayer. 7. If these steps do not correct the issue, replace the FFC cable.
Not all features are operational In the GenICam section of GEVPlayer, some features may be marked with a red exclamation point, which indicates that you cannot configure the feature.	Camera not properly connected to IP engine	Ensure a secure connection of the IP engine to the block camera, replace the cables, or retry the connection with a different block camera.

Table 10: Troubleshooting Tips (Continued)

Symptom	Possible cause	Resolution
Connection to device lost appears in GEVPlayer	The heartbeat interval is too restrictive	The **Connection to device lost** message can indicate restrictive settings for the heartbeat synchronization between the computer and the IP engine. **Important:** Ensure the computer's heartbeat interval (**HeartbeatInterval**) is at least double the IP engine's heartbeat interval (**GevHeartbeatTimeout**) to avoid a timeout. To access the heartbeat settings: 1. In GEVPlayer, click **Communication control.** 2. Under **Heartbeat**, take note of the **HeartbeatInterval**. This field shows the computer heartbeat interval. 3. Close the **Communication Control** dialog box. 4. Click **GEV Device control**. 5. Click **Guru** in the **Visibility** list. Under **Transport Layer Control** take note of the **GevHeartbeatTimeout**. This field shows the IP engine heartbeat interval.
Connection to device lost appears in GEVPlayer when loading a User Set (using the **UserSetLoad** feature). For information about using User Sets, see the *GEVPlayer Quick Start Guide* or the *GEVPlayer User Guide*.	The answer timeout and heartbeat interval are too restrictive	The **Connection to device lost** message can indicate restrictive settings for the answer timeout and heartbeat synchronization between the computer and the IP engine. To change the answer timeout and heartbeat settings: 1. In GEVPlayer, click **Communication control.** **Important:** Before you change the settings, take note of the current values, as you will restore them at the end of this procedure. 2. Under **Communication**, change the **AnswerTimeout** to **20000**. 3. Under **Heartbeat**, change the heartbeat settings to the following values: • **HeartbeatInterval**. 2500 • **DefaultHeartbeatTimeout**. 30000 4. Close the **Communication Control** dialog box. 5. Click **GEV Device control**. 6. Click **Guru** in the **Visibility** list. 7. Under **Transport Layer Control** change the **GevHeartbeatTimeout** to **30000**. 8. Close the **GEV Device Control** dialog box. 9. Load the User Set using the **UserSetLoad** feature in GEVPlayer. 10. After successfully loading the User Set, restore the **AnswerTimeout**, **HeartbeatInterval**, **DefaultHeartbeatInterval**, and **GevHeartbeatTimeout** to the original settings.

Table 10: Troubleshooting Tips (Continued)

Symptom	Possible cause	Resolution
Dropped packets: GEVPlayer, NetCommand, or applications created using the eBUS SDK	Insufficient computer performance	The computer being used to receive images from the IP engine may not perform well enough to handle the data rate of the image stream. The eBUS Universal Pro driver reduces the amount of computer resources required to receive images, and is recommended for applications that require high throughput. Should the application continue to drop packets even after the installation of the eBUS Universal Pro driver, a computer with better performance may be required.
	Insufficient NIC performance	The NIC being used to receive images from the IP engine may not perform well enough to handle the data rate of the image stream. For example, the bus connecting the NIC to the CPU may not be fast enough, or certain default settings on the NIC may not be appropriate for reception of a high-throughput image stream. Examples of NIC settings that may need to be reconfigured include the number of Rx Descriptors and the maximum size of Ethernet packets (jumbo packets). Additionally, some NICs are known to not work well in high-throughput applications. Refer to the *Network Adapters Knowledge Base Technical Note*, available at the Pleora Technologies Support Center.

Changing to the Backup Firmware Load

In some cases, you may need to change from the main firmware load to the backup firmware load. You can use the slide switches (SW1 and SW2 on the daughter card) to change to the backup firmware mode.

To access the slide switches, peel back the small, protective plastic sheet that covers each slide switch.

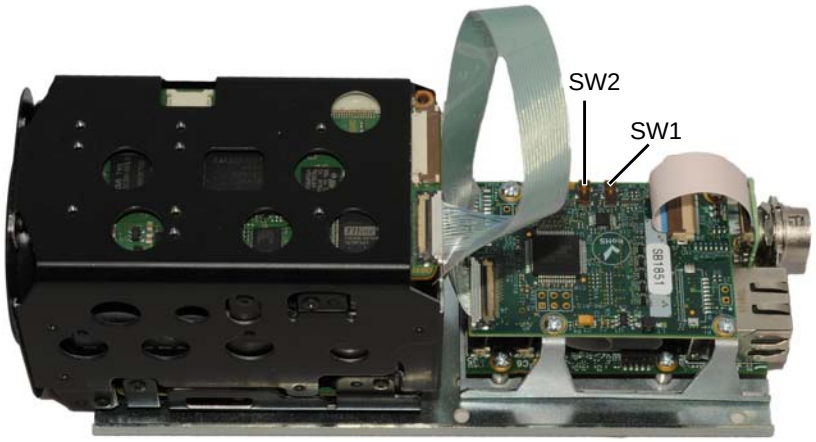


Table 11: Slide Switch Settings

SW1 slide switch	SW2 slide switch	FPGA load
Off (labeled OF)	Off (labeled OF)	Main load
Off (labeled OF)	On	Backup load
On	Off (labeled OF)	Backup load
On	On	Backup load

Chapter 8

Reference: Mechanical Drawings and Material List

This chapter provides the mechanical drawings, and also provides a list of connectors and cables, with corresponding manufacturer details.

Three-dimensional (3-D) mechanical drawings are available at the Pleora Technologies Support Center.

The following topics are covered in this chapter:

- "Mechanical Drawings" on page 54
- "Material List" on page 63

Mechanical Drawings

The mechanical drawings in this section provide the IP engine's dimensions, features, and attributes. All dimensions are in millimeters.

The drawings in this section include all connectors that could be present on any iPORT SB-Pro IP engine. Because your IP engine is designed to be connected to a specific family of block cameras, it will have fewer connectors than shown in the mechanical drawings in this section.

Figure 3: PCB Stack — View A

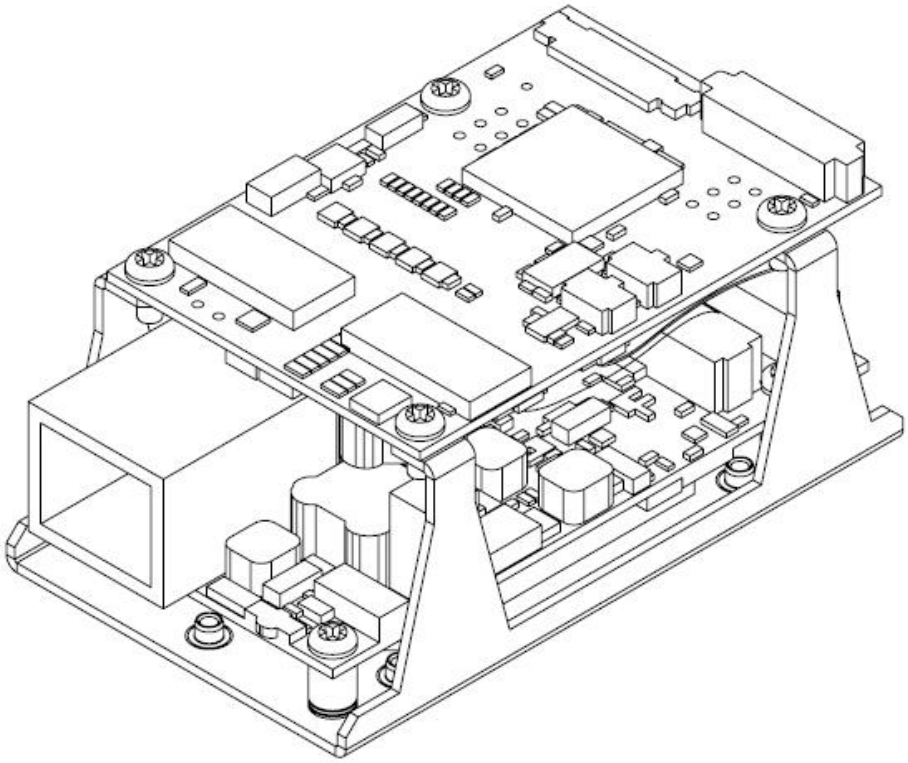


Figure 4: PCB Stack — View B (Top View)

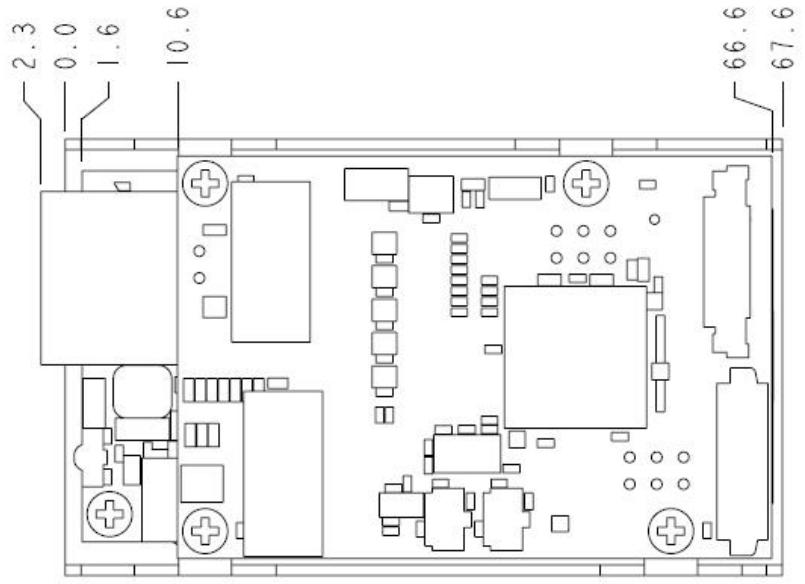


Figure 5: PCB Stack — View C (Front View)

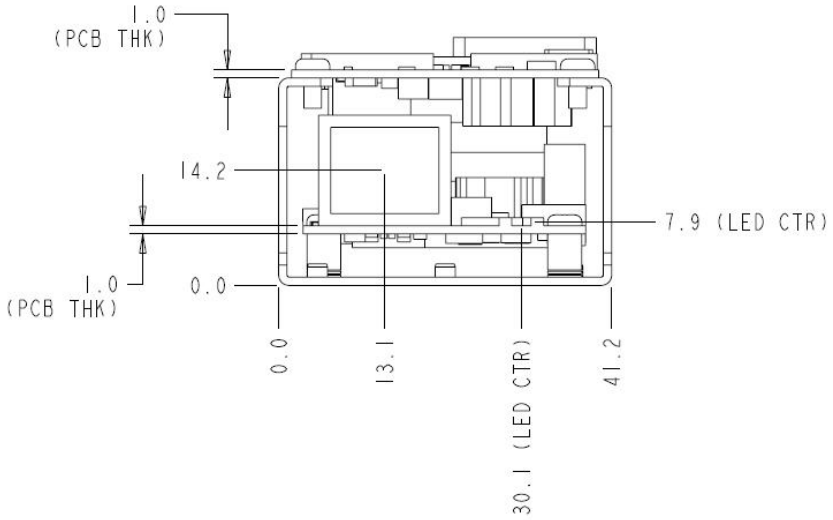


Figure 6: PCB Stack — View D (Side View)

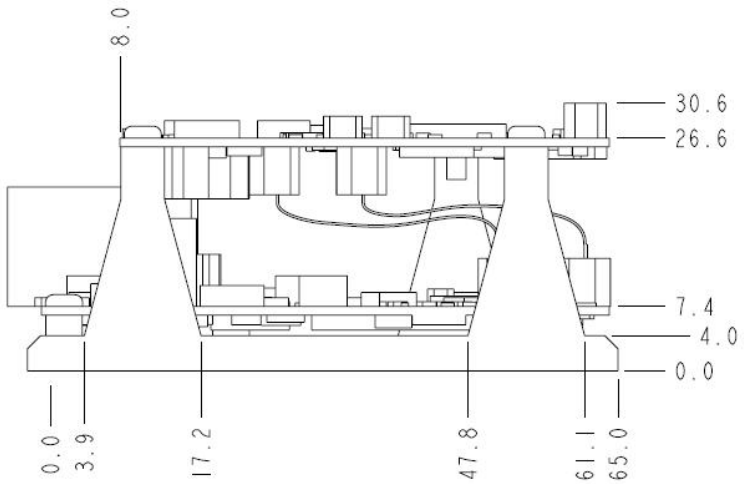


Figure 7: PCB Stack — View E

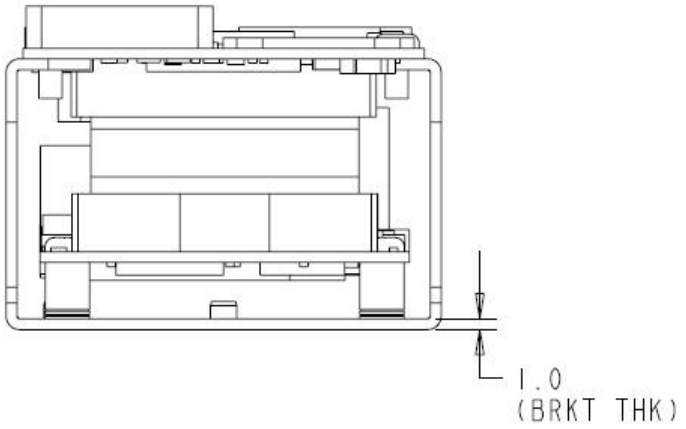


Figure 8: PCB Stack — View F (Bottom View)

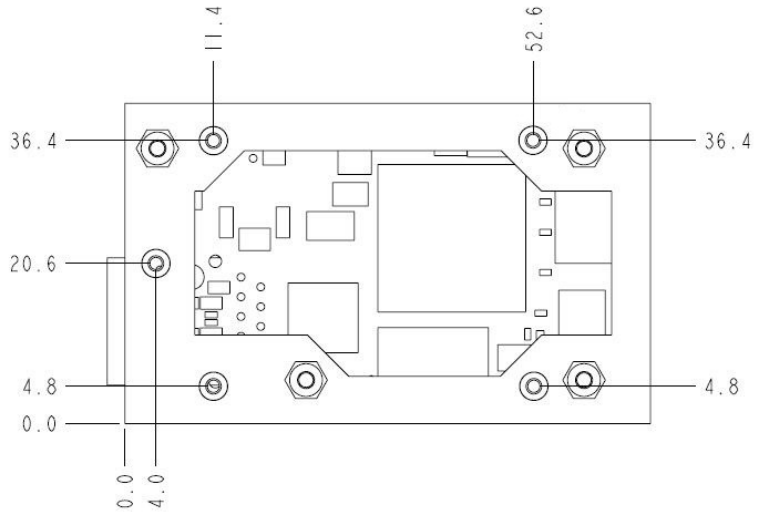


Figure 9: Daughter Card Layout — View A

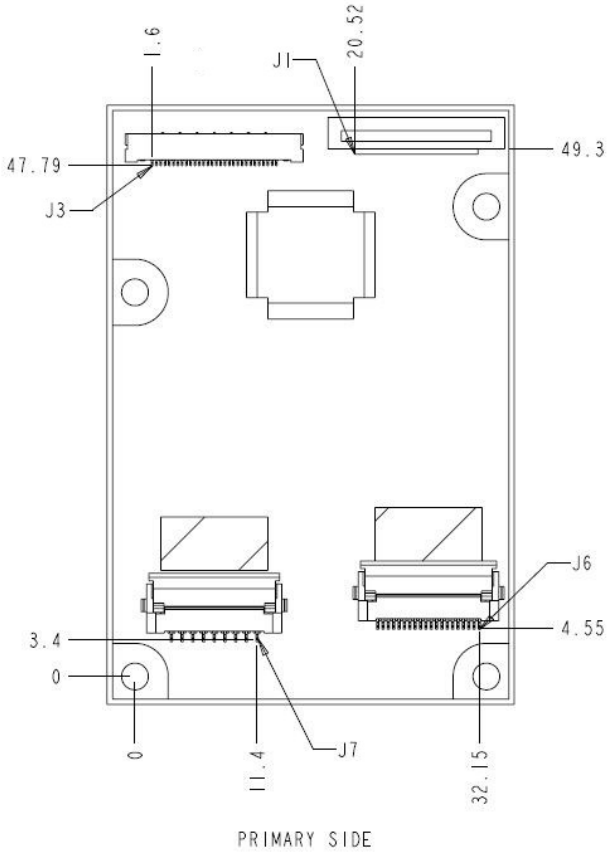


Figure 10: Daughter Card Layout — View B

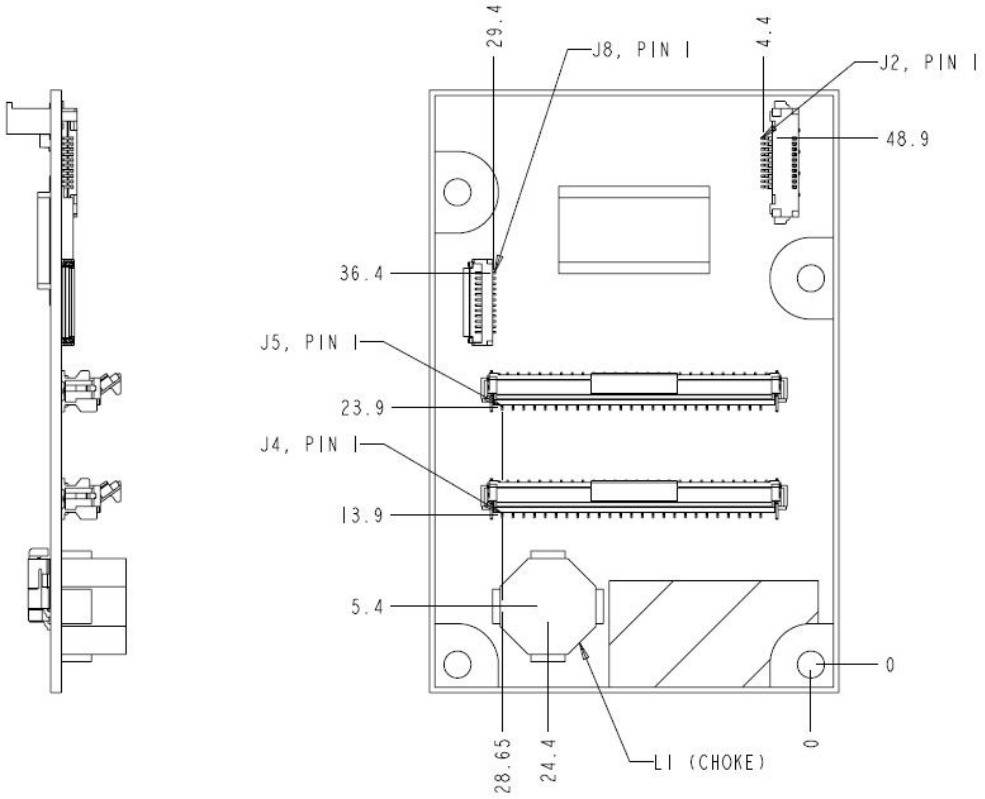


Figure 11: Daughter Card Component — View A

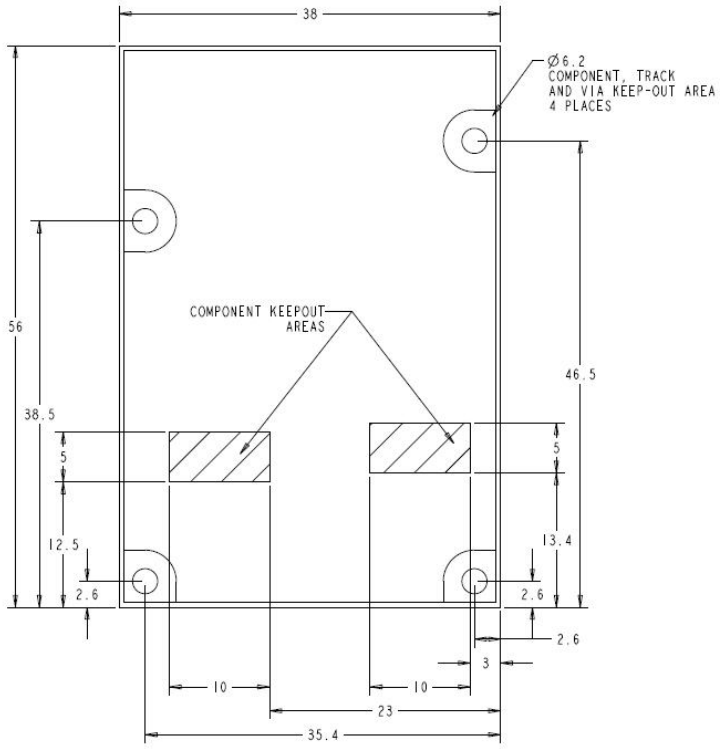


Figure 12: Daughter Card Component — View B

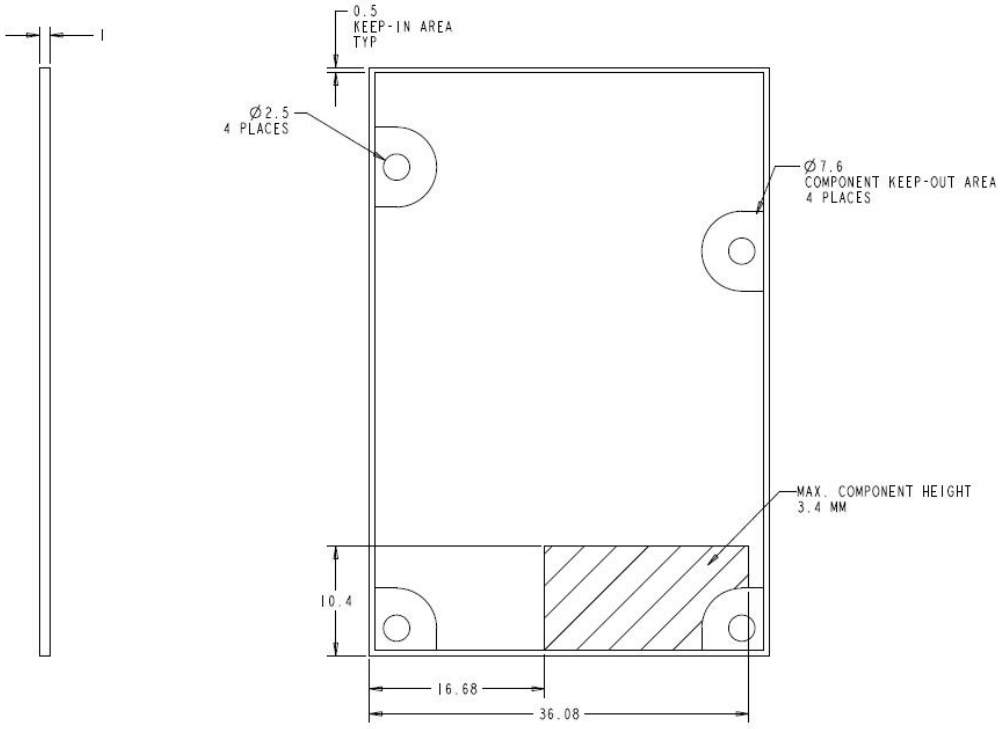


Figure 13: Bracket

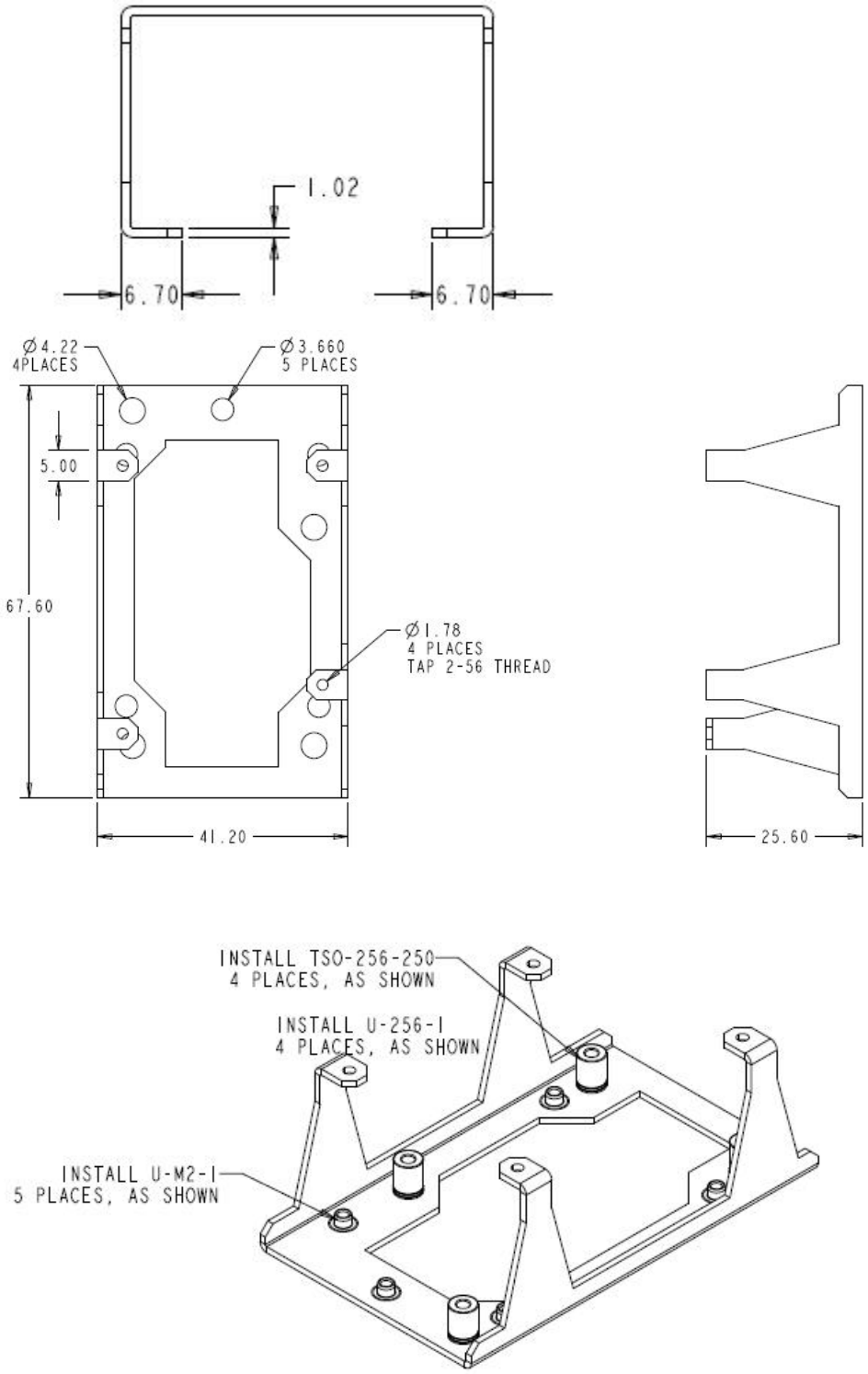
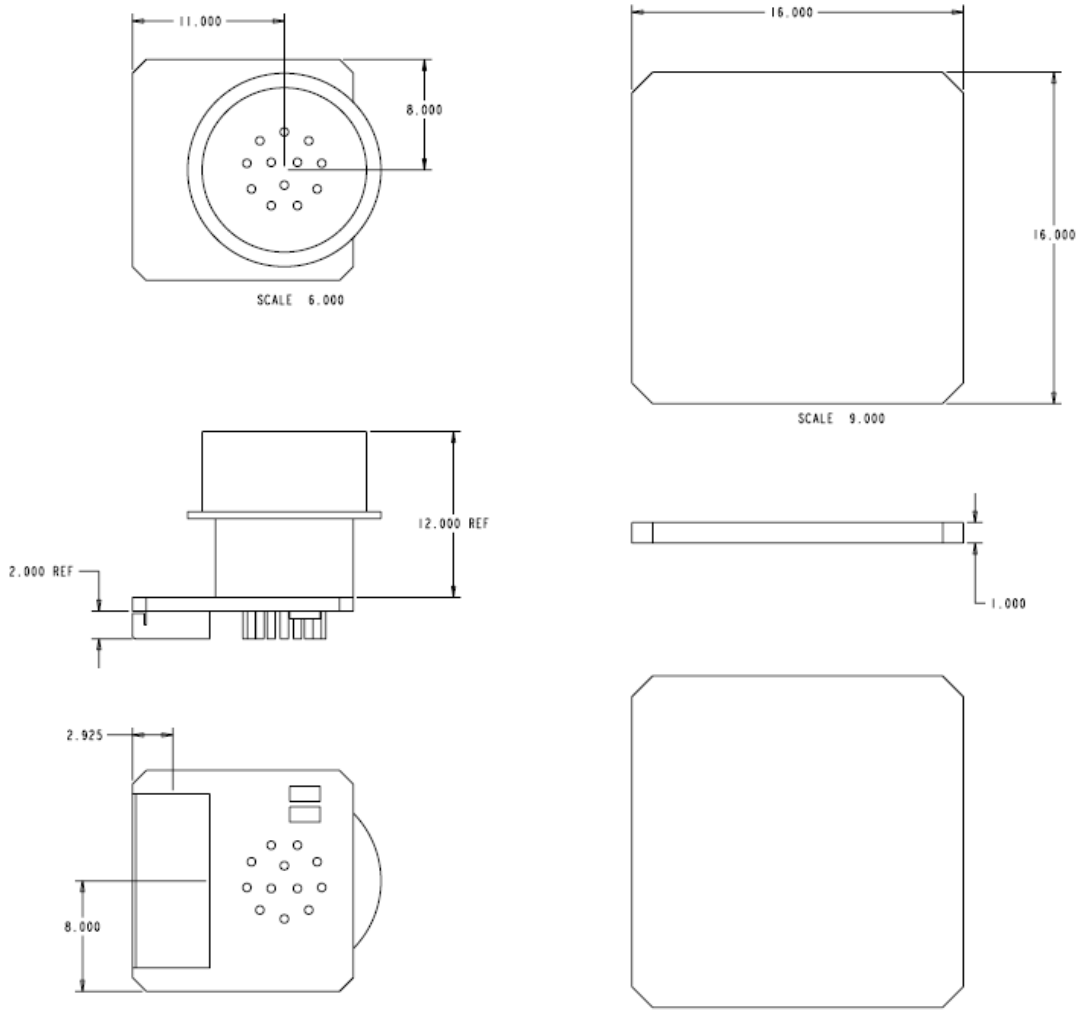


Figure 14: 12-Pin GPIO and Power Connector



Material List

The connector and cable summaries for the IP engine are listed in the following tables.

Table 12: Connector Summary

ID	Location	Description	Manufacturer part number	Manufacturer
J1	Main board	RJ-45 jack, green/green LED, horizontal	HFJ11-1G11E-L11RL	Halo
UI	Adapter board	20-pin FPC/FFC connector, 0.5mm pitch, gold, horizontal, SMD	FH12-20S-0.5SH(55)	Hirose
J4	Daughter card	30-pin fine pitch coax connector, 30-pin, 0.4mm pitch	USL00-30L-A	Kel
J5	Daughter card	20-pin FFC connector, 0.5mm pitch, horizontal, SMD	FH12-20S-0.5SH(55)	Hirose
J1	Adapter board	12-pin circular connector, male	HR10A-10R-12PB(71)	Hirose

The IP engine uses a straight-through Ethernet cable (not a crossover cable); it can automatically adjust the signals to communicate either through a switch or directly to a host computer. It also adjusts the data rate automatically to transmit at 10 Mbps, 100 Mbps, or 1 Gbps.

Table 13: SB-Pro IP Engine Board Set Cable Summary

Cable from	Cable to	Description	Manufacturer part number	Manufacturer
J4 (daughter card)	Block camera	Cable fine pitch coax, 150mm, 30-pin, 0.4mm pitch, opposite side	USL20-30SS-015-CH	Kel
J5 (daughter card)	J1 (adapter board)	20-pin FFC, 2" length, 0.5mm pitch	MCC20-51-4/6-H1	Flexconn
			FFC0.50A20/0043S440606SAKK/AU	Axon
			150200207	Molex
Main board (x2)	Daughter card (x2)	50-pin FFC,0.5mm pitch*	FFC0.50A50/0043S440606SAKK/AU	Axon
			MCC50-51-4/6-H1	Flexconn
			150200537	Molex

* Pleora Technologies has verified satisfactory operation with cables between the IP engine and camera heads that exceed 6 inches (15 centimeters). However, we strongly caution against the use of long cables, unless you have extensive experience in the areas of large-scale grounding and Electromagnetic Compatibility (EMC).

Source manufacturer, description, and identification may vary for each connector and cable.

Chapter 9

Technical Support

At the Pleora Support Center, you can:

- Download the latest software.
- Log a support issue.
- View documentation for current and past releases.
- Browse for solutions to problems other customers have encountered.
- Get presentations and application notes.
- Get the latest news and information about our products.
- Decide which of Pleora's products work best for you.

To visit the Pleora Support Center

- Go to www.pleora.com and click **Support Center**.

  If you have not registered yet, you are prompted to register.

  Accounts are usually validated within one business day.

If you have difficulty finding an existing solution in the knowledge base, post a question by clicking **Log a Case**. Provide as many specific details about your system and the nature of the issue as possible.